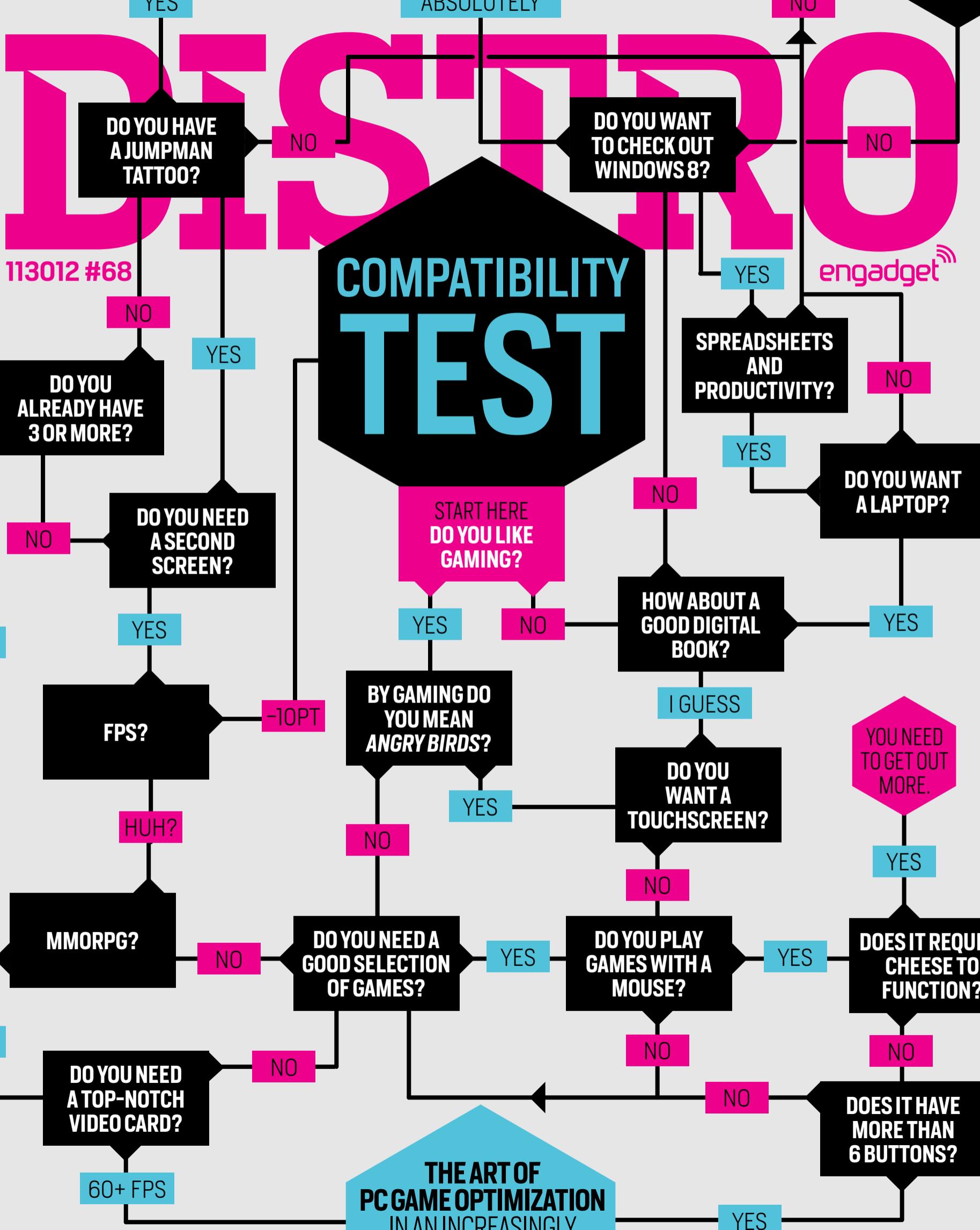


NINTENDO WII U  
CAN THIS NEW SYSTEM  
CHANGE THE GAME?

LENOVO THINKPAD TWIST  
A NEW SPIN ON THE  
WINDOWS 8 HYBRID

KINDLE FIRE HD 8.9 4G LTE  
AMAZON'S LATEST,  
LARGEST FIRE





iPad 4:20 AM 32%

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4	Twitter Gains Realtime Activity Streams	TechCrunch	3 minutes ago
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6	Foodspotting Hits A Million Downloads	TechCrunch	just now
7	No Charges For Chen In iPhone 4 Leak Case	TechCrunch	8 minutes ago
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9	Twitter Gains Realtime Activity Streams	TechCrunch	8 minutes ago

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DISTRO

11.30.12

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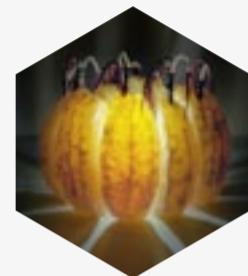
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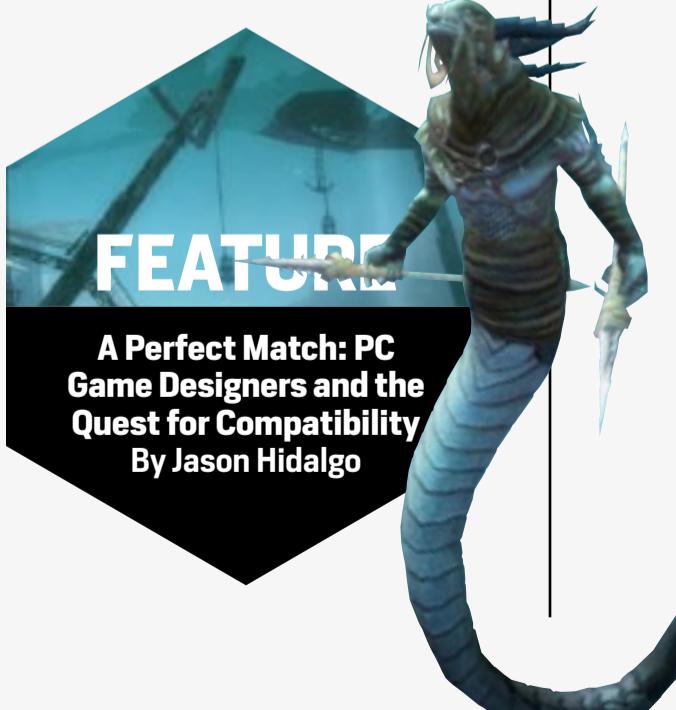
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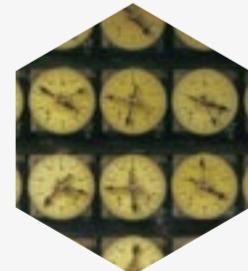
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# A LITTLED WII TAKES OFF TO THE GREAT WHITE NORTH

DISTRO  
11.30.12

EDITOR'S  
LETTER

The biggest shopping holidays of the year are over, which means it's time to go back to paying full retail for gadgets — or whatever Amazon is charging, anyway. Sales on both Black Friday and Cyber Monday were way up over last year; Friday shot 26 percent over 2011, crossing the \$1 billion mark for the first time. Cyber Monday sales, meanwhile, climbed an estimated 17 percent for a total of \$1.46 billion. With online sales so strong, the days of getting up at 4AM to stand in a chilly line outside of Best Buy may be behind us, replaced by hitting up [bestbuy.com](http://bestbuy.com) as soon as you get to your cubicle in the morning. I'm okay with that.

No shortage of digital shoppers went to Amazon.com on both days to try and strike on one of the hundreds of "Lightning" deals cycling through over the weekend. Along the way, plenty of people took the time to buy themselves a Kindle of some sort. While Amazon continued its frustrating trend of not giving us any hard numbers, overall Kindle sales were "more than double" that of last year. Of course,



with the addition of the Paperwhite and the two new Fire HD models, there are more Kindles to choose from than ever before. That had to help at least a little bit.

Microsoft too was reveling in its strong sales, but it was kind enough to give us some actual figures. It moved a whopping 750,000 Xbox 360 consoles during the week ending on Black Friday. (That number would have surely been much higher had they gone through Monday.) That's nearly double the number of Wii U consoles Nintendo managed to sell during its launch period, making Microsoft the clear leader for home console sales in the US. I'm eager to see whether it can carry that momentum over to the next generation.

Nintendo's hoping to pick up a little retail steam with a new, cheaper Wii. It's the Wii Mini. It's red, lacks internet connectivity, has no way to access the Virtual Console, can't play GameCube games and costs \$99 Canadian. Yes, Canadian, because this system is, at least through the holidays, exclusive to Canada. I am a big fan of America's



great neighbor to the north, it's a wonderful place, but still it's a bit of a curious market for Nintendo, a decidedly Japanese company, to launch a console exclusively. While that could be a sign of Nintendo's affinity for Poutine and Tim Hortons donuts, more likely it says a lot about the perceived lack of interest in a console that's slightly smaller, \$50 cheaper and rather less powerful than the full version.

No concerns about the worldwide success of the Samsung Galaxy Note II, which the company indicated has sold a quite impressive 5 million units. That's a big number for a very big phone, a figure that's soon to be boosted by the American release on Verizon. By the time you read this the phone should be available at retail VZW stores, while those who pre-ordered got theirs on the 29th. I know this because I myself pre-ordered one. Yes, I've made a commitment to a new phone and can finally put my aged daily driver Droid Charge out to pasture. Poor thing.

Google also started shipping Nexus 4 orders this week and released a new batch online for purchase — which promptly overloaded and killed the company's online ordering system. Again. Desperate buyers were smacked in the face with a flurry of error messages and indications that the phone had sold out, even when there was still stock. It is a somewhat embarrassing state of affairs, that a company as dominant online as Google can't han-

dle the rush of its own sales. But hey, problems due to unexpected demand are a good thing, yeah?

Apple, meanwhile, is beginning to meet the demand for its latest release, with the 21.5-inch version of the new and improved, thinner iMac hitting retail. Those wanting the bigger, 27-inch model will have to wait another few weeks.

In this week's Distro you can read our full take on Nintendo's Wii U, and you can see for yourself if it's something worth celebrating this holiday season. Dana Wollman takes Lenovo's latest ThinkPad for a spin, the convertible Twist, which tries to be the perfect blend of laptop and tablet for Windows 8. You can also read my review of the Kindle Fire HD 8.9, which may be of interest if you found the last Kindle Fire HD slightly too small. We also have impressions of the \$40 Aakash 2 tablet, Joshua Fruhlinger talks about the joys of local shopping on Black Friday in Modem World, while Jake Yapp of the #Yappfactor and BBC Radio Leeds sits down for Q&A. So, take a break from the gift wrapping, get yourself a fresh cuppa and lose yourself in this, your weekly dose of tech. 



TIM STEVENS  
EDITOR-IN-CHIEF,  
ENGADGET



# DNA DEFICIENCY, MISONEISTS AND THE WONDERS OF YOGA



Touch article names  
to read full threads

DISTRO  
11.30.12

INBOX



HTC DROID DNA  
ISSUE 67,  
NOVEMBER 23RD, 2012

“I’m sorry but non expandable memory is a deal breaker. 32GB is a standard phone size. Any less and they are clearly wanting you to use your data. Also it’s clear they can give us a better battery, better camera, and better processors. It’s the profits game. They have already invested and purchased components and slowly release them into small upgraded phones

“I love everything about this phone ... except the 16GB memory without an SD card expansion. WTF HTC! ¶ That’s like buying a BMW, Mercedes, Audi, etc., with a two-gallon fuel tank! ¶ So because of this flaw... I will pass.”

—NORCALANDREW

and in the long run they earn way more money rather than simply just releasing the best available specs. I can guarantee you 1080p technology could have been released much sooner than the Droid DNA.”

—JOSHHWWAAAAAA

“HTC’s right hand: ‘Ahm, you do realize, don’t you, that we already offer the One X+ with 64 GB of storage?’

Left hand, having just unveiled the Droid DNA: ‘SAYWHA??!!’

I’ve been anxiously awaiting this GORGEOUS



phone for months and was planning on buying one — but not with a relatively minuscule battery and laughable storage capacity. (Why don't they just offer 512 MB of storage?!) Simply amazing that HTC keeps on repeating their previous hardware mistakes. I thought Peter Chou had gotten serious this summer when, after the One X's dismal reception, he issued that ultimatum that they weren't going to make any more missteps. But they obviously value pleasing the carriers more than they value their own reputation. With everything this has going for it they could've so easily made it the first real superphone."

**—BUMMER**

THIS IS THE  
MODEM WORLD:  
WE'RE ALL A BUNCH  
OF CRANKY OLD MEN  
ISSUE 67,  
NOVEMBER 23RD, 2012

"I've been riding the wave of change since the days of DOS. I used to be the guy who always got something

**"Animals change habitat — they try their best to adapt to prevent lowering their population and eventually becoming extinct. ↳ Windows 8 removes the Start button — almost all of us groan."**

**—JOSHUA VARGAS**

new and fiddled it all back to the way it was (I turned off all the graphical goodies in Windows XP to make it mostly indistinguishable from Windows 98, for example), but I quickly realized that the time and energy I spent bitching about change and switching everything back to the way it was before was just delaying the inevitable: I would have to learn the new thing anyway. I still have fond memories of user interfaces long since

gone, but when I go back to them now, I think 'WTF were they thinking?'

This is why I refuse to add a start menu back to Windows 8. Nobody else will do this, so if I do it and live in my insular little 'Windows-8-with-start-button' world, the shock will be even greater when I have to (gasp) use or fix someone else's computer.

If you adapt to change instead of fighting it and bitching about it like a crotchety old man, you'll



be far better off in the long run."

**-LOCUST776**

### LENOVO IDEAPAD YOGA 13

ISSUE 67,  
NOVEMBER 23RD, 2012

"Having owned the Yoga 13 since release, I am absolutely in love with this convertible. It is light, it lasts me a whole work-day on a charge (I am just a code monkey though), and the storage issue can be addressed by deleting some 40-50GB in recovery partitions. ADDITIONALLY! There is an empty PCI-E slot that we can use to add another 256GB SSD and I have not noticed any extra power use or weight from it. With some software and hardware tweaks, there is not a single comparable product to the Yoga so far."

**-LILCAAZN**

"I have actually used the Yoga for two weeks now. The laptop functions very well and gives you a full Windows 8 experience. It is what a Windows 8 laptop should aspire to be.

I have an upgraded laptop with Windows 8 (no touch screen but using [a] Logitech touchpad) and it makes me hate Windows 8. Using the Lenovo with a touchscreen makes me love Windows 8 (just not for a desktop). The belief that it is too big to be used as a tablet is false. If you look at facts, 90% of people use tablets at home on the couch, etc. Walking and talking carrying it around in tablet mode like it is a phone is not how people are going to use it.

People tend to be seated when using tablets. You will use the Yoga sitting on your lap or table, trust me you just will. If you want to complain it is too heavy to carry then please go to the gym. I see plenty of people toting the Macbook Air all over the place. The large screen makes touch screen typing very, very easy. After using the Yoga I wouldn't use Windows 8 without a touchscreen. That alone speaks to how good I think the Yoga is."

**-MGRAHAM.IDIZ**

**"Woah, a Lenovo that actually looks visually appealing. Seems Windows 8 actually started a healthy trend."**

**-UNTRACEABLE.NAME**



# ENTHR

EYES-ON

DISTRO  
11.30.12

## OAKLEY AIRWAVE GOGGLES

### HIGH-TECH EYEWEAR

Looking to spend a little extra on some dapper ski / snowboard gear this winter? Oakley's Airwave goggles look stellar in more ways than one. On the outside, the eye protection dons the aesthetics we've come to expect from the optics authority. But on the inside, these units pack a heads-up display that keeps slope goers up to speed with a variety of info.

THE DAMAGE: \$600



PHOTOGRAPHS BY WILL LIPMAN





# i.am+ iPhone Camera Accessories



Click on  
product  
names to  
read full  
stories

**So, we learned two things recently.** First, Will.i.am is able to attract quite a media scrum, and second, national press photographers have sharp elbows. Nevertheless, we braved the London debut of the Black Eyed Peas star's i.am+ iPhone accessories and fortunately came away with more than just Elephunk-sized bruises. We got some brief playtime with the gadgets, plus an interview with the CEO of Will.i.am's tech venture — none other than Chandra Rathakrishnan of Fusion Garage fame (or notoriety).

The foto.sosho C.4 is the basic model at £199, which includes a flash module, three interchangeable lenses (macro, fish-eye and clear glass) and a grip to make it easier to wield your iPhone like a point-and-shoot. The foto.sosho V.4 costs £299 (\$415) and adds a slide-out backlit QWERTY keyboard that pairs with your phone over Bluetooth while

being draped in vintage styling. Like the C.4, it'll go on sale December 6th exclusively at Selfridges in London. The foto.sosho V.5 and "luxury" L.5 take a very different approach to "social-digital photography" and they'll only play nice with the iPhone 5. The all-black V.5 we held

was a non-working prototype, but it'll do something no other accessory currently does, by circumventing Apple's camera components and using its own 14-megapixel sensor and 5x zoom lens to provide superior image quality. No word on pricing for those just yet, though.

**PRICING:**  
£199+ (\$315+)

**AVAILABILITY:**  
DECEMBER 6TH  
(C.4 & V.4)

**BREAKDOWN:**  
WILL.I.AM'S  
SET OF FLASHY  
iPHONE CAMERA  
ADD-ONS  
BOLSTER THE  
WORK OF MOBILE  
PHOTOGS FOR A  
PREMIUM.



# AAKASH 2

**With the second version of** the Aakash tablet, DataWind is hoping to make good on the promise of an ultra-affordable tablet that can actually be used by students and educators. The Aakash 2, CEO Suneet Tuli believes, can be the tool that ignites a quiet revolution thanks to its exceptionally low price. The unit is certainly no threat to the iPad or the Nexus 7, but we're actually pretty impressed with what is served up for less than the price of an Amazon Prime subscription: 1GHz Cortex A8 CPU, 512MB of RAM, 4GB of expandable storage, Android 4.0 and a capacitive touchscreen. Now, there are some serious issues with the device that would probably prove to be deal-breakers for Western consumers, but this is light years beyond other cheap tablets we've toyed with in the past.



In general the UI was responsive, and less demanding tasks like reading e-books and checking email were pretty painless. Even HD video on YouTube proved to be no problem for this tiny slate.

The biggest problem with the device is its screen — both its touch layer and stunningly poor viewing angles.

Often our swipes were misinterpreted as taps. Unless the heavyweights suddenly decide to start taking a serious loss on hardware sales, the DataWind device seems like the best bet to get the internet into the hands of millions of students in developing nations. And that's where technology has a chance to make a real difference. ◀

**PRICING: STARTING AT \$40**

**AVAILABILITY: NOW AVAILABLE, GOVERNMENT ONLY (INDIA)**

**BREAKDOWN: A SUB-\$50 SLATE TAKES AIM AT EDUCATION IN DEVELOPING NATIONS WITH A FAIRLY IMPRESSIVE SPEC SHEET.**



DISTRO  
11.30.12

ENTER

WEEKLY  
STAT

# Photo Feeding Frenzy

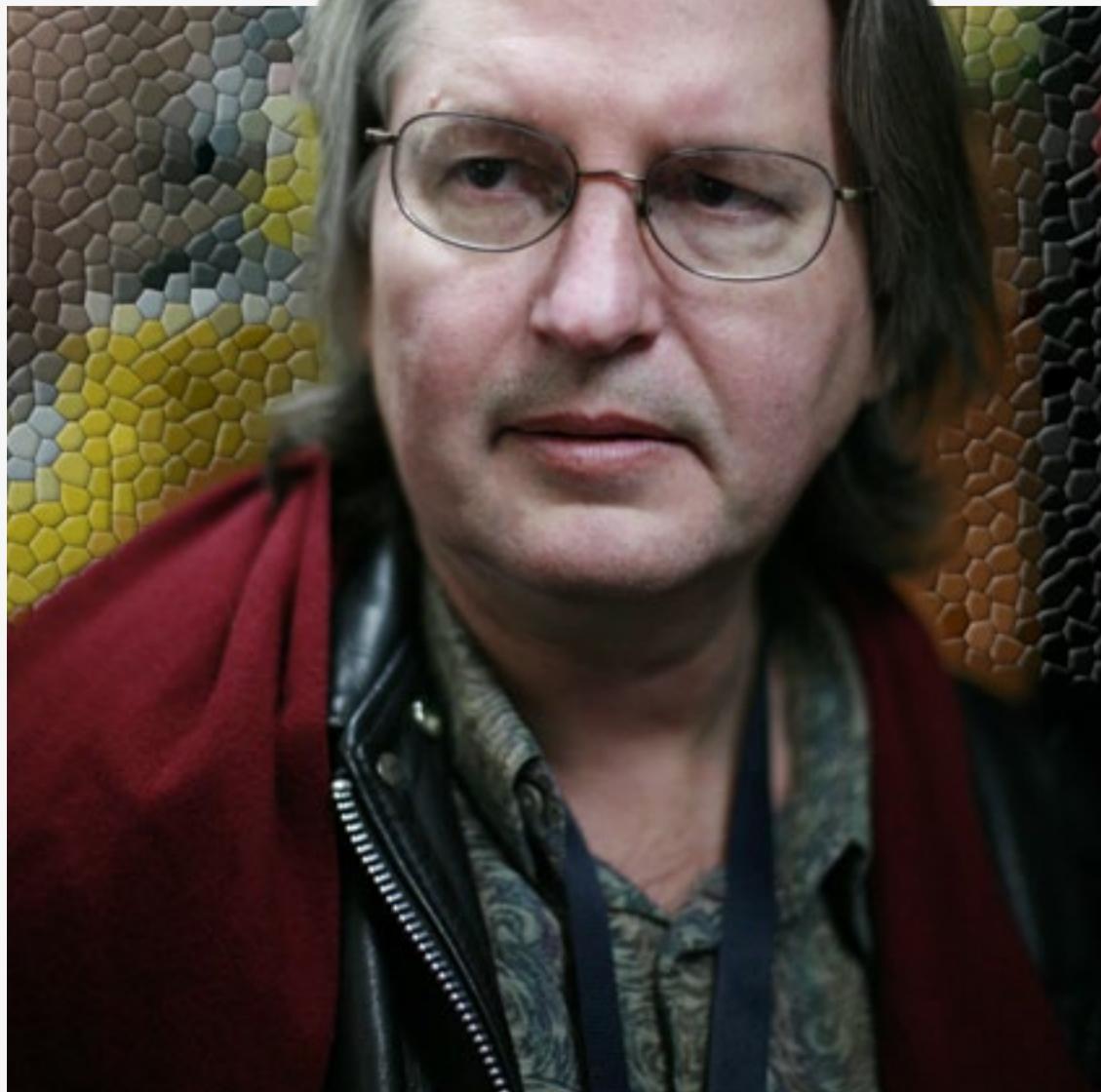
**They say a picture is** worth a thousand words — and boy did Instagram's servers have a colossal amount of words to deal with last week. Via its blog, the Facebook-owned picture-sharing service announced that, on Thanksgiving Day, more than 10 million holiday-related images were shared on the social network, which saw peak activity come in at around 12 PM Pacific time with over 200 filter-packed (*no filter*, in some cases) images-per-second being Instagrammed. Moreover, Thanksgiving marked one of the app's most active periods in its short history, with Instagram saying that the holiday "broke all records as we saw the number of shared photos more than double from the day before, making it our busiest day so far." Now bring on the *#leftovers*.

—Edgar Alvarez

SOURCE: INSTAGRAM BLOG

## THANKSGIVING PHOTOS uploaded PER SECOND TO INSTAGRAM (PST)





## Beyond the Beyond

By Bruce Sterling

**It remains fairly spartan and understated** (and harder to find) compared to some of *Wired*'s other blogs, but the magazine's first experiment with the format, *Beyond the Beyond*, is still being published almost 10 years after it launched, and it remains as vital as ever. That's due in no small part to the sole author behind it: Bruce Sterling. Best known for his work in science fiction, Sterling has been using the blog to chronicle everything just shy of that (with some genuine science fiction thrown in for good measure). Most recently, that's included a particular focus on augmented reality and 3D printing, as well as the rise of the "New Aesthetic" movement, of which Sterling was a key early voice. But it's also very much Sterling's personal blog, which means that just about anything goes.

PHOTOGRAPH BY ROBERT SCOBLE

### With 35mm Film Dead, Will Classic Movies Ever Look the Same Again?

By Daniel Eagan, *The Atlantic*

Plenty has been written about the death of film and how it's changing how movies are shot, but it's equally important not to overlook the change in how we view those already "filmed." As Eagan explains, those changes aren't just due to a diminishing number of 35mm or 70mm prints, but poorly digitized versions of movies that risk being permanently preserved in that state.

### Revolution: The Story of Wii

By Rob Crossley, *CVG*

Any new console launch, such as this month's Nintendo Wii U, is also cause to look back on the previous one. Among the best of recent articles in that respect is this piece which charts the rise of the Wii from the very beginning, including how things could have changed significantly if Microsoft or Sony had played their cards differently.

### Before the iPad, There Was the Honeywell Kitchen Computer

By Daniela Hernandez

*Wired Enterprise*

The Honeywell Kitchen Computer may not be quite as well known as some other landmarks of early computing but, as this piece details, it's a fascinating device in its own right. It had an imposing size and design that immediately brings "The Jetsons" to mind — not to mention its equally imposing \$10,000 price tag.

### iTunes Through the Ages

By Jacqui Cheng, *Ars Technica*

iTunes may have its share of detractors, but it's difficult to overstate the impact it's had on how people buy and listen to music. As Jacqui Cheng reminds us in this brief history, though, the buying only came with version 4.0, and the listening has changed significantly as newer features like Genius and Home Sharing made their debut.



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# FEAR AND LOATHING IN THE LOCAL BIKE SHOP



DISTRO  
11.30.12

FORUM

THIS IS THE  
MODEM WORLD

BY JOSHUA FRUHLINGER

**BY NOW, CYBER MONDAY IS PROBABLY** as big as Black Friday in terms of sales and retail excitement. According to IBM's Smarter Commerce arm, Cyber Monday online sales jumped 30 percent this year. A few years ago, Cyber Monday seemed to start as a joke, e-tailers having a "me too" at everyone returning to work, hoping to pick up a couple extra sales from those who didn't score on Black Friday.

This was, of course, when brick-and-mortar shops still outsold their online brethren. Blockbuster Video still occupied mini-malls; Barnes & Noble sold CDs and didn't know a thing about tablets. There was a quiet respect for brick-and-mortar stores in the quaint nature of Cyber Monday: 20 percent off underwear and free shipping, but that was about it.

While some venture out to the big stores to wrestle for a 32-inch, \$149 LCD TV that they'd never buy any other day, the rest of us are content to stay

home and pick off the good deals as they float by in cyberspace. We watch videos of seemingly normal people pummel one another in animalistic feeding frenzies just to get their hands on phones, socks and microwaves. And we say, "Yeah, no."

I'm one of the latter set: The notion of entering a store on Black Friday is about as appealing to me as a dentist appointment in the dead of winter, but I'm quite happy to pick off some good online deals.





# I set out to visit two of the most reputable bike shops in the area ... in the dead of Black Friday.

This year, I was in the market for a new mountain bike. My first move, of course, was to look online where I found a multitude of great deals, free shipping and, of course, no tax. I then checked online communities like mtbr.com where I was guilted into checking my local bike shop. For not much more money, it was argued, I'd establish a relationship with a local dealer who would also service my bike and hook me up with equipment and accessories over the life of the bike.

This sounded nice. I like relationships. So I set out to visit two of the most reputable bike shops in the area, money at the ready, in the dead of Black Friday.

The first shop was set up for the big day with a clearance tent out front full of last year's shoes and pedals. I sauntered past into the showroom and over

to the mountain bikes. I stood, staring, waiting for help from one of the three unoccupied salespeople. After 10 minutes, not one approached me. Finally, I walked up to the counter to ask a young Bieber-esque dude if I could get some help. Without leaving the comfort of the counter, he asked, "What are you looking at?"

"Well, I'm not sure, but I wanted to check out the Specialized and Yetis you have."

"What's your budget?"

"I'm still figuring that out."

He was still behind the counter. I told him I'd come back when he wasn't so busy.

Things felt better as I walked into the next shop. It was a smaller affair without tents, and I was immediately approached by someone who looked like he knew a



# Maybe it's me, but I'm pretty sure that I'm of a generation of shoppers who prefer to do their dealing digitally.

thing or two about the sport. The guy was nice, but unfortunately I knew more about the equipment they were selling than they did, and this was only after maybe three hours of Googling.

I asked for model comparisons and he replied, "I mean, well, they're about the same."

This was for two bikes with a \$500 price differential.

I asked to see a particular pedal and before I could ask to see another to compare, he walked to the back, returned with a box in hand, handed it to me and left me to carefully unpack it in fear of ripping the packaging before I made any purchase decisions. He gave me the feeling that he had better things to do than deal with me.

I thanked him and asked for his card, resigned to do my ordering online and without local love. Perhaps I didn't make it clear enough that I was ready to buy. A friend suggested that I probably looked like I knew what I was doing and that they didn't need to educate me. Maybe I had "Online Deal Freeloader"

written all over my face and he knew I was a lost cause.

When I returned home, I dropped an email to my chosen e-tailer asking if they had any Black Friday specials running. A nice person named Mike called me within five minutes and offered a 15 percent discount and free shipping. He was able to explain the difference between various models and helped me pick the best option based on my riding style and experience. He then recommended some pedals based on his own personal experience and threw them in at a heavy discount. He created a custom shopping cart, sent me a link via email and the deal was done.

Maybe it's me — it probably is — but I'm pretty sure that I'm of a generation of shoppers who prefer to do their dealing digitally. Pricing, features and customer service appear to be on the up-and-up when it comes to online retailers. The brick-and-mortar versions, however, come off as survival games that, to this path-of-least-resistance shopper, aren't worth the trip. 



# REVIEW

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Lenovo  
ThinkPad  
Twist



Kindle  
Fire HD  
8.9 4G LTE



Nintendo  
Wii U



LENOVO  
THINKPAD  
TWIST

**Lenovo's Twist adds some flexible Win8 fun for ThinkPad fans looking to upgrade, but will this hybrid build enough buzz for the next generation?**

By Dana Wollman

**It used to be that “convertible PC”** could mean only one thing: a laptop whose display swiveled around, folding down into tablet mode. Now that Windows 8 is here, though, the category has become a bit muddied. How else to describe our recent collection of reviews? In just the past few weeks alone, we’ve tested a laptop whose screen folds all the way back, an Ultrabook whose display flips inside the hinge and yet another with a slide-out keyboard. Anything





goes — at least until consumers decide which form factor they like best.

But when Lenovo calls its new ThinkPad Twist a convertible, you can rest assured it's using the old-school definition. As the name implies, it has a rotating screen that allows it to be used as a 12-inch slate. And, like all the business-friendly ThinkPads that came before it, it sports a well-engineered keyboard, a secondary set of touch buttons and, of course, that signature red pointing stick. Now, though, it runs a much more finger-friendly OS, and has a touchpad that can support all the new gestures in Windows 8. It's one of several new touch-capable notebooks from Lenovo, but it's the only one geared toward business users. So is this worth the upgrade from an older ThinkPad? And is it a better buy than Lenovo's *other* Win 8 convertible, the IdeaPad Yoga 13? Read on to find out.

## LOOK AND FEEL

You've seen this design before. And no, we're not even talking about that

classic convertible form factor: the Twist has the same look and feel as every other PC in Lenovo's ThinkPad Edge lineup. Like those other models, it sports a soft-touch black finish; rounded corners; a pair of ThinkPad logos with glowing "i"s; and, of course, an island-style keyboard, complete with a red pointing stick and a second set of touch buttons. Basically, it looks like a ThinkPad, which is probably why you're here.

That said, there are some clear indicators that this is one of Lenovo's lower-end machines (you know, in case the price didn't make that obvious). The lid is ringed with a silver-colored band that's supposed to look like metal, but is actually just glossy plastic. There's more shiny stuff to be found beneath the display: there you'll find a wide piece of plastic that houses the Start button and volume buttons. The keyboard panel is made from the same material, so if you look closely, you'll see shiny bits in between the buttons. Not to put too fine a point on it, but that tacky, reflective material looks especially odd next to the matte, soft-touch materials used on the lid and keyboard deck. On the bright side, there's a magnesium alloy frame underneath it all, so while the Twist looks chintzy in places, it actually feels quite solid.

At 3.48 pounds, the Twist is slightly heavier than other 12-inch, touchscreen Windows 8 convertibles such as the Dell XPS 12, but you'd be hard-pressed



to notice unless you had the opportunity to handle the two side by side. Point is, it's plenty easy to cradle in the crook of your arm, or hold one-handed. As you'd expect, the form factor lends itself well to presentations, which is probably a more likely use case here than with a strictly consumer laptop. Still, like so many other 12- and 13-inch Windows 8 convertibles, it's a little too unwieldy to use the way you'd use an iPad, or any other standalone tablet. That said, the screen is responsive, and that soft-touch material feels nice against the fingers. More than anything, we wish the screen accepted pen input, given that it's mainly businesspeople who are going to be buying this.

When it comes to the actual twisting bit, the dual hinge works one way: you rotate the screen clockwise to flip it around into tablet mode (it simply won't budge if you try and push it the other way). The hinge itself feels sturdy, though we noticed that once we were in

tablet mode the accelerometer was a bit slow to detect changes in orientation. Thankfully, it figured it out most of the time, though we consistently had trouble moving from portrait mode to using the machine as a clamshell laptop; we often had to fiddle with it in order to get the desktop upright again.

One nice surprise here is that this is one of very few 12-inch laptops to include an Ethernet jack. Good news for all you road warriors who'd prefer to use a wired internet connection the next time you're camped out in a Hyatt. Additionally, Lenovo threw in two USB 3.0 ports, a mini-DisplayPort, a 3.5mm headphone jack and a mini-HDMI socket. There's also a memory card reader, something that often gets left off small machines like this. Looking for the power button? You'll find that on the edge of the lid, down by the keyboard. There's a screen lock button too, in case you think you know better than the built-in accelerometer.



The Twist's namesake hinge has a sturdy, stable feel to it.



## KEYBOARD AND TRACKPAD

Save for a few small modifications, this is more or less the same six-row, island-style keyboard Lenovo used on the X230 and some other recent systems. At this point, it's been at least six months since the company unveiled its latest keyboard design, but it's still worth recapping what's new, as we imagine some folks are only just getting around to upgrading their old ThinkPads. The important thing to know (besides the fact that this is a chiclet layout) is that the keys have about 30 percent more surface area than they used to. Meanwhile, the page up / down buttons have migrated down south, so that they're clustered in with the arrow keys, arranged side by side instead of stacked on top of one another. It's also spill-resistant, like other ThinkPad keyboards before it. As for ergonomics, Lenovo has maintained that even though it's moved from a traditional spread to a chiclet arrangement, the keys should still offer about the same amount of pitch. In other words, typing on one of Lenovo's chiclet keyboards should theoretically feel similar to typing on one of the company's older models.

Well, we think our resident ThinkPad Fanboy-in-Chief Tim Stevens would disagree with that, but nonetheless, this is still an excellent keyboard, even if it does take diehards a little time to get used to. The U-shaped "Smile" keys offer a comfortable resting place for the fingers, while offering forceful feedback and absolutely no give in the underlying

This is an excellent keyboard, even if it does take ThinkPad diehards time to get used to.

panel. What's nice is that the keys are spaced far enough apart that you're unlikely to ever hit the wrong one. At the same time, Lenovo didn't have to shrink down the Enter, Shift or Caps Lock key to compensate. All told, it's one of our favorite laptop keyboards, and *definitely* the best you'll find among Ultrabooks, a category where typing ergonomics often fall by the wayside.

So what's new? For starters, Lenovo has added four Windows 8 hotkeys to the Function row up top. These include buttons for searching, settings, the app list and toggling between open apps. With regards to that last one, you'll see a row of thumbnails stretch across the screen, with each one representing an open program. You can click on them with your mouse or finger, of course, but you can also use the left, right and Enter keys to select the one you want. In the past, we've made no secret about the fact that we prefer using Windows 8 with some sort of touch input device, but it's still nice to see Lenovo adding an extra option for folks who prefer keyboard shortcuts.

One other change: this keyboard is not backlit, though you'll find other models in Lenovo's lineup that are. The X230 is one such machine.



Finally, what would a ThinkPad review be without a nod to that signature pointing stick? If you've grown addicted to the thing, rest assured: it's as comfortable and easy to control as ever. If you've always wondered why Lenovo hasn't retired the ol' red nub yet, maybe it's time to finally give it a try. Particularly compared to the touchpad, which falters at single-finger navigation, the pointing stick is impeccably precise when it comes to moving the cursor around screen. We also like that you can push the stick to the left or right as a way of speeding through pages of Live Tiles.

The touchpad is still useful for certain multi-touch gestures, though, including Windows 8-specific ones like swiping in from the left to toggle through open applications. Clearly, the touchpad drivers still needs some fine-tuning, as it's a little too easy to accidentally launch apps when all you're trying to do is move the cursor around the screen. Still, the pad itself has just the right amount of friction, and already responds well to those Win 8 gestures, so we feel it has potential as a more all-purpose navigation device once Lenovo fixes the drivers.

## DISPLAY AND SOUND

At the center of it all is that 12.5-inch touchscreen. It's coated in Gorilla Glass, like so many other panels we've tested recently, which means, predict-

Where the touchpad's accuracy fails, the nub succeeds.



ably, that it stands up well against nicks and scratches. The 350-nit brightness rating is above average for laptops and indeed, particularly with the brightness cranked up, we had no problem viewing the screen from odd angles. Even if you don't plan on having friends crowd around to watch movies off Netflix, that wide visibility comes in handy if you're laying the tablet face-up on a flat surface — a likely scenario when your arms invariably get tired from using this 3.48-pound machine in tablet mode.

The vertical viewing angles, meanwhile, are especially nice if you're working with the machine in your lap; you won't have to search for a sweet spot just to avoid wash-out. The one thing that might ruffle some shoppers' feathers is the 1,366 x 768 pixel count, particularly since Lenovo's own Yoga 13 starts at \$1,000 with a 1,600 x 900 display. ASUS' Zenbook Prime Ultrabooks, meanwhile, have 1080p screens, and can be had for a little over a grand.



DEVICE	PCMARK7	3DMARK06	3DMARK11	ATTO (TOP DISK SPEEDS)
<b>LENOVO THINKPAD TWIST (1.7GHZ CORE i5-3317U, INTEL HD 4000)</b>	3,113	4,066	E1033 / P549	136 MB/s (reads); 130 MB/s (writes)
<b>ACER ASPIRE S7 (2.4GHZ CORE i7-3517U, INTEL HD 4000)</b>	5,011	4,918	E1035 / P620 / X208	934 MB/s (reads); 686 MB/s (writes)
<b>LENOVO IDEAPAD YOGA 13 (1.7GHZ CORE i5-3317U, INTEL HD 4000)</b>	4,422	4,415	E917 / P572	278 MB/s (reads); 263 MB/s (writes)
<b>TOSHIBA SATELLITE U925T (1.7GHZ CORE i5-3317U, INTEL HD 4000)</b>	4,381	4,210	E989 / P563	521 MB/s (reads); 265 MB/s (writes)
<b>DELL XPS 12 (1.7GHZ CORE i5-3317U, INTEL HD 4000)</b>	4,673	4,520	N/A	516 MB/s (reads); 263 MB/s (writes)

When it comes to audio quality, the sound is about as tinny as you'd expect, though not any worse than what you'll get from other Ultrabooks. The only difference of note is that volume levels are more subdued than on other laptops we've tested.

## PERFORMANCE AND BATTERY LIFE

Though the \$900 Staples configuration we tested has the same Core i5-3317U CPU as many other ultraportables we've tested recently, it has hybrid storage instead of an SSD — specifically, a 500GB 7,200RPM drive paired with 24 gigs of flash storage. As you'd expect, then, its performance scores are lower than what it might have gotten had it had an SSD inside. On PC-Mark 7, for instance, it notched 3,113

— at least 1,000 points lower than your typical Ivy Bridge Ultrabook.

Naturally, too, its I/O performance is fairly modest: in the disk benchmark ATTO it reached top read speeds of 136 MB/s and max writes of 130 MB/s, whereas most SSD-powered Ultrabooks are capable of at least twice the write speeds, and two to three times the read rates. And though that 24GB SSD is there largely to help speed up boot times, the Twist's 17-second startup is still about 50 percent slower than other Windows 8 machines we've tested recently. Still, if you're old enough to remember minute-long boot sequences, this really shouldn't be an issue.

In terms of graphics clout, the Twist falls in line with other ultraportable PCs we've tested recently, which makes sense since they all use Intel's integrat-



DEVICE	BATTERY LIFE
LENOVO THINKPAD TWIST	4:09
SAMSUNG SERIES 9 (15-INCH, 2012)	7:29
LENOVO THINKPAD X230	7:19
SAMSUNG SERIES 9 (13-INCH, 2012)	7:02
MACBOOK AIR (13-INCH, 2012)	6:34 (OS X) / 4:28 (Windows)
DELL XPS 14	6:18
HP FOLIO 13	6:08
HP ENVY SLEEKBOOK 6Z	5:51
TOSHIBA PORTEGE Z835	5:49
SONY VAIO T13	5:39
LENOVO IDEAPAD YOGA 13	5:32
MACBOOK AIR (13-INCH, 2011)	5:32 (OS X) / 4:12 (Windows)
DELL XPS 12	5:30
HP ENVY 14 SPECTRE	5:30
TOSHIBA SATELLITE U845W	5:13
TOSHIBA SATELLITE U845	5:12
ACER ASPIRE TIMELINE ULTRA M3	5:11
TOSHIBA SATELLITE U925T	5:10
LENOVO THINKPAD X1 CARBON	5:07
SAMSUNG SERIES 5 ULTRABOOK (14-INCH, 2012)	5:06

ed HD 4000 graphics. Which is to say, if you're interested in gaming, you're better off sticking with older titles, and opting for the minimal settings. In *Call of Duty 4*, for instance, we managed between 18 and 20 frames-per-second, and that was with resolution all the way down at 1,024 x 768. Throughout, the machine stayed relatively quiet, which we can't say of every Ultrabook we've tested recently. The bad news: it gets a little warm. Not pants-scorchingly hot, but warm enough that your legs might start to feel a little toasty. Even when we were just streaming music from Grooveshark with no other applications running, we could feel tepid air coming out of the side vent.

Before we started receiving all these Windows 8 PCs to review, we had an idea that battery life on touchscreen systems would be shorter than what we've seen from non-touch models. What we didn't realize was how startling the difference would be. At best, the convertibles we've tested have lasted through five and a half hours of video playback. In the case of the Twist, we were lucky to make it past four. With a video looping, WiFi on and brightness fixed at 65 percent (standard conditions for us), our best run totaled four hours and 18 minutes. At times, though, the 43Wh battery died before even reaching the four-hour mark. Apparently, too, these results are normal: after running a series of similar tests, Lenovo's own product team also



saw battery life results hovering in the four-hour range.

What's curious is that the Twist doesn't even have that much overhead, so to speak. It's not like this is a pin-thin system, with room for just the smallest of batteries. And it's not even powering a higher-res display. And yet, this is the second-worst showing we've seen from an Ultrabook. Meanwhile, the Dell XPS 12, which weighs less and has a full HD screen, lasted more than an hour longer in the same test. So that leaves us with a vexing question: we know touchscreens are bad news for battery life, but why does the Twist in particular fare so poorly?

## SOFTWARE AND WARRANTY

While the Twist isn't completely free of bloatware, the list of pre-installed apps is *much* shorter than what you'll find on other new PCs. On board, you've got Evernote, Amazon's Kindle app, Skype, AccuWeather, eBay, the streaming service rara.com and a shortcut for Intel's AppUp store. Other apps include Microsoft Office, a trial of Norton Internet Security, Lenovo Support and Lenovo Solutions for Small Business, which includes backup and restore options, a USB blocker, software monitoring, an energy-saving profile and tune-up utilities (think: cookie deletion and disk defragmentation). Finally, there's Lenovo Cloud Storage, which is powered by SugarSync on the back end.

Those are the apps that came in-

stalled on the system, but there's one more you can download through Lenovo's support site if you're so inclined. It's called QuickLaunch, and it brings back the old-style Start Menu so many of you have been missing. Now it's true, if you really wanted to avoid the new tiled Start Screen you could just pin favorite apps to the Taskbar, or create desktop shortcuts. Still, it's nice to have the option of searching for apps the old-fashioned way. As an added touch, there's also a shortcut for shutting down the computer — you know, in case, opening up the Charms Bar is one swipe too many.

Though some higher-end business machines come with three years of coverage, the Twist has a one-year warranty. That's pretty standard for most PCs (consumer and otherwise), especially at this price.

## CONFIGURATION OPTIONS

As it happens, we tested a pre-configured model that retails exclusively at Staples for \$900. There's also a \$745 model with a Core i3 processor and 320GB of storage. If you'd rather have some control over the specs, you can order it from Lenovo's own site for \$1,129 and up (as of this writing, it's going for a promotional price of \$1,016). Now, if you're wondering why the price is so much higher, there's a good reason: this guy has a Core i7-3517U processor, along with 8GB of RAM and a 128GB SSD. Quite the up-



grade over the \$900 model, we'd say. We'd also add that for \$1,000-ish, the specs are on par, if not better than, similarly priced Ultrabooks. Actually, most thousand-dollar Ultrabooks have a Core i5 CPU with four gigs of memory, so particularly at that promotional price, it's a good deal.

## THE COMPETITION

If you look to last season's products, you'll find plenty of traditional convertibles, including several generations' worth made by HP. Now that we've entered the Windows 8 era, though, we've seen few PC makers announce anything like this — at least, nothing aimed at business users. We have a feeling that if you hold out a little longer, companies like Dell and HP will unveil some additional hybrid devices designed for small businesses and enterprise customers. But right now, at least, we can't think of many other Windows 8 PCs that can be used in tablet mode, run Windows 8 and offer business-friendly features.

But what if you're just a consumer who really likes Lenovo's keyboards? If that's the case (and we know there are some you out there), you've got a different set of concerns. On the one hand, if you're so fond of the Lenovo brand that you'd be willing to spring for a business machine, you might not be satisfied with something like the XPS 12, as nice a machine as it is. Funnily enough, Lenovo's biggest competition here might come from,

Since Windows 8 launched, we've seen few PC makers announce anything like this — at least, nothing aimed at business users.

well, Lenovo. If you're considering the ThinkPad Twist, you may as well take a look at the Yoga 13, whose screen can fold back 360 degrees, allowing the PC to be used not just in tablet mode, but in a couple other poses that fall somewhere in between slate and standard notebook. If you go for the Yoga, you'll get a lighter-weight machine, a sharper 1,600 x 900 screen, longer battery life and a solid-state drive (none of this hybrid business).

Now for the bad: the Yoga has more crapware, and is also missing all of the self-help apps aimed at small business users who probably don't have a dedicated IT guy. The keyboard is similar to the Twist's, in that the keys have the same U-shape, but we were disappointed at how small the Backspace button was. We also found that the keys didn't register all our presses; the feedback here isn't nearly as satisfying as what you'll enjoy on a ThinkPad. So, it's not the same typing experience you can expect from the Twist, but it's still superior to what most other Ultrabooks are offering. That and it offers



much better specs (and much better performance) for about the same starting price (\$1,000 as of this writing). Chew on that before you think of pulling the trigger.

## WRAP-UP

Lately, we feel like all of our reviews of Windows 8 convertibles end the same way. The ThinkPad Twist has plenty going for it: a bright IPS display, a good port selection, an affordable price and an unrivaled typing experience. Like ThinkPads past, it also offers some useful software features for businesses lacking dedicated IT departments. All good things, but what's a road warrior to do when the battery barely lasts four hours?

Something tells us the Twist will still appeal to Lenovo loyalists, folks who trust ThinkPad's build quality and wouldn't be caught dead using any

other keyboard. If you're more brand-agnostic, though, there are other Windows 8 convertibles with comfortable keyboards — not to mention sharper screens, faster performance and longer battery life. Heck, Lenovo's own IdeaPad Yoga 13, currently going for \$1,000 and up, is one of them.

If you're wary of consumer machines, though, another option is to just wait: Lenovo was first out of the gate with a Win 8 convertible for business users, but who knows what HP and Dell have up their sleeves? If nothing else, the Twist shows us that Windows 8 and traditional convertibles make a wonderful match. So good a match, in fact, that there will probably soon be more options to choose from. 

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*Dana Wollman is Reviews Editor at Engadget, a marathoner, lover of puns and a native Brooklynite.*

## BOTTOMLINE

**LENOVO  
THINKPAD  
TWIST**  
**\$900+**



### PROS

- Excellent keyboard
- Good port selection
- Wide viewing angles
- Useful tools for businesses

### CONS

- Short battery life
- Performance trails without an SSD
- Some trackpad issues

### BOTTOMLINE

Lenovo updates a tried-and-true form factor with Windows 8, a bright IPS display and an excellent keyboard. However, longer battery life would have made this a better choice for road warriors.



KINDLE FIRE HD  
8.9-INCH 4G LTE

The Kindle Fire HD 8.9 adds extra real estate and offers 4G LTE at a premium, but are you getting enough bang for your buck?

By Tim Stevens

**W**hat a difference a generation makes. While the original Kindle Fire impressed, there was only one thing that really made it worth considering: it was cheap. Really cheap. But when we got our hands on the 7-inch, 720p Kindle Fire HD a few months back, we had an honest-to-gosh nice device — that happened to be cheap. And what do we have here? Why, it's a slightly larger version of that very same tablet, but at a significantly higher cost.

It's the Kindle Fire 8.9, a tick under two inches larger at the diagonal but with a starting price



of \$299 for 16GB, \$100 more than the cheapest 7-inch Fire HD. It goes way up from there, though, with the 32GB LTE version we tested starting at a rather more dear \$499. That's far beyond the threshold of cheap, but does it still make for a good value? Join us as we find out.

## HARDWARE

Unboxing the Kindle Fire HD 8.9 was a familiar experience, as it looks and feels identical to its 7-inch predecessor. Slightly larger, of course, but the design is virtually indistinguishable — right down to the subtle molding seams at each of the four corners.

Indeed its horizontal and vertical dimensions have swelled to make room for that 8.9-inch, 1,920 x 1,200 IPS LCD. The tablet measures 9.45 x 6.5 inches (240 x 165mm) across but it's actually slightly thinner than the 7-inch model: 0.35 inch vs. 0.4 (8.9 vs. 10.3mm).

It's great to see that Amazon didn't take the opportunity to make this thicker, but honestly you'll be hard-pressed to notice the difference. You will, however, notice the increase in heft: 20 ounces vs. 13.9 for the 7-inch model (567 vs. 395 grams).

As on the 7-inch-

Unboxing the Kindle Fire HD 8.9 was a familiar experience, as it looks and feels identical to its 7-inch predecessor.

er, we're reasonably fond of the design language Amazon has deployed here. It's a bit dark, to be sure, with a soft-touch matte black backing that's livened up only by a slightly glossy (but every bit as dark) band that runs lengthwise, roughly one-fifth the way up from the bottom. Branding on the tablet is delightfully minimal, the Amazon logo subtly printed on the bottom and "kindle" embossed on the shiny band.





The Kindle Fire's subtle branding and rear speaker grille.

That band again runs from one speaker to the other, visually connecting stereo speakers that are still a disappointing rarity on tablets. But, unfortunately these are relegated to the wrong side of the thing, unlike the Nexus 10 which kindly points them in the right direction. Each speaker is protected beneath a slotted grille, but curiously those slots are shorter than those on the 7-inch Fire HD, and don't wrap as far around the side. Visually this makes them slightly less interesting than the ones on the smaller Fire, but it's still a nice touch.

Around the rim of the device is a dark rim made of a more durable material. Here all the physical inputs and outputs are found. On the upper side of the right edge is the 3.5mm headphone jack sitting just atop a flush-mounted volume rocker and power button. We still wish these stood out a bit more, as the tiny ridges on the volume but-

ton are a challenge to find and it takes more sensitive fingers than can be found on this editor's hand to locate that power button without looking. Mind you, this is still a huge improvement over the original Kindle Fire, which lacked physical volume controls altogether.

Center-mounted at the bottom are the micro-USB and micro-HDMI ports, separated by exactly the same distance as on the 7-inch model, opening the door for a video output and charging cradle that would work with both. Between these ports is the tiny microphone opening, which is curiously up on the top of the smaller Fire HD. There's nothing to speak of on the left side and on the upper edge can be found a pop-out tray where the micro-SIM tray lives — assuming you opted for the LTE model that we tested. That's the only visual differentiator between the WiFi and cellular models, with both dimensions and weight staying the same.

## INTERNAL AND CONFIGURATIONS

The Kindle Fire HD 8.9 is chock full of very similar stuff to its 7-inch predecessor, including a dual-core OMAP





Unboxing  
the Fire HD  
from its cozy,  
eco-friendly  
packaging.

processor. This one is a 4470 model running at 1.5GHz — a 300MHz step-up from the other. Amazon doesn't advertise RAM but a system check shows 770MB. As for storage, the base \$299 configuration has 16GB built in, while another \$70 bumps that up to 32GB.

An LTE model is available, starting at \$499 for the 32GB model. Here you can pay another \$100 and go up to the full-fat Fire HD, a 64GB edition with LTE. Of

course, all of these include Special Offers, the in-your-face lock screen advertising that we find a bit distasteful, but it's only \$15 to opt out and now you can even choose to pay that money up front and have yours come out of the box with nary an ad in sight.

The WiFi-only model includes the same MIMO wireless setup that we found to be quite impressive on the 7-inch Kindle Fire HD, offering better range, recep-

**\$499 is a bit dear for a Kindle device, but you do at least get an off-contract LTE tablet that has access to one of the most attractive prepaid data plans out there.**



tion and performance than other tablets and smartphones we tried. The 4G LTE model augments that with an AT&T cellular radio, which can also fall back to HSPA+, HSDPA and EDGE in a worst-case scenario. (For those curious about bands, it is as follows: LTE 17, 4; WCDMA 1, 2, 5, 8; GSM 850Mhz, 900Mhz, 1800Mhz and 1900MHz.)

\$499 is a bit dear for a Kindle device, but you do at least get an off-contract LTE tablet that has access to one of the most attractive prepaid data plans out there. Pay \$49.99 once and you get a year's worth of data access, with 250MB at your disposal each month. Pay for that and Amazon will throw you another 20GB of Cloud Drive storage and even give you \$10 to blow in the Amazon Appstore. Granted, it's an extremely modest amount of data, but for casual users who check the news and email while on the road, or download the occasional book, it should be more than adequate.

That said, you're not free to use that data however you like. Content downloads greater than 50MB in size must happen over WiFi, and for the moment Amazon Instant Videos cannot be streamed unless you're on WiFi. However, we're told that, at least, will be enabled sometime before December, but movie downloads will remain WiFi only.

## DISPLAY AND SPEAKERS

With tablets like the 2,048 x 1,536 fourth-gen iPad and 2,560 x 1,600 Nex-

us 10 on the market, it's a little hard to get too excited about the 8.9-inch 1,920 x 1,200 IPS LCD found in the Kindle Fire HD 8.9. But, while it won't win any awards for pixel density, it's still a great display and perfectly well-suited to the sort of content consumption this slate is designed for.

Brightness and contrast are as good as you'd expect an IPS LCD to be, and viewing angles are superb. It doesn't offer quite the "Gosh I can't see the pixels" experience of the Nexus 10, but text is rendered very cleanly and of course 1080p videos look fantastic — though the micro-HDMI output means you can make them look even better on a big 'ol HDTV.

Still, not everything looks great. The patented carousel of content that the Kindle Fire HD presents relies on icons that are now forced to render larger, and at a higher resolution, than was surely ever intended. Book covers and

The Kindle Fire HD doesn't offer quite the "Gosh I can't see the pixels" experience of the Nexus 10, but text is rendered very cleanly and of course 1080p videos look fantastic.



movie posters look fine in the carousel, as do Kindle-optimized apps, but many third-party Android icons look atrocious. Mind, you can't knock a tablet too harshly for blurry icons, but when this is your primary means of interaction with the thing, it's unfortunate that it's quite often so ugly.

While the display is a definite step forward over the 7-inch Kindle Fire HD, the speakers are a half-step back. They're curiously not the dual-driver design of the smaller slate and lack some of the oomph that little brother packs. Maximum volume is lower and fullness of sound reproduction a bit weaker, but overall sound quality is about the same. That is to say, tinny but acceptable and, when placed face-down on a desk, this makes for a decent hotel room music player.

## PERFORMANCE AND BATTERY LIFE

Again, the 8.9-inch Kindle Fire HD has a dual-core TI OMAP4470 processor running at 1.5GHz, a 300MHz upgrade from its predecessor. This makes the heavy-handed Fire OS that's sitting on top of Android a bit more responsive, but things can still be sluggish from time to time. Webpages render quickly and

pinch-zooming is quite responsive, but scrolling through those is often a very stuttery affair.

The slate delivers an average SunSpider benchmark score of 1,412ms, a solid improvement over the 1,767ms that the 7-inch Kindle Fire HD clocked in, and respectably close to the 1,371 the Nexus 10 puts down. For comparison's sake, our top-scoring tablet, the fourth-gen iPad, burns through the test in 865ms.

As part of our testing we also downloaded and installed a number of games, as we figure that'll be a popular activity here. Simple, 2D stuff (like *Angry Birds Star Wars*) of course ran with aplomb, but 3D games too ran perfectly well. Unfortunately, given the more limited nature of the Amazon Appstore we weren't able to run all of our favorite benchmarks, but we don't think casual gamers will be left wanting.

Amazon advertises 10



TABLET	BATTERY LIFE
KINDLE FIRE HD (8.9-INCH)	9:01
APPLE IPAD MINI	12:43 (WIFI)
SAMSUNG GALAXY TAB 7.7	12:01
APPLE IPAD (LATE 2012)	11:08 (WIFI)
APPLE IPAD 2	10:26
ASUS EEE PAD TRANSFORMER PRIME	10:17
KINDLE FIRE HD (7-INCH)	9:57
SAMSUNG GALAXY TAB 10.1	9:55
APPLE IPAD (2012)	9:52 (HSPA) / 9:37 (LTE)
GOOGLE NEXUS 7	9:49
MICROSOFT SURFACE FOR WINDOWS RT	9:36
APPLE IPAD	9:33
ASUS TRANSFORMER PRIME INFINITY TF700	9:25
PANTECH ELEMENT	9:00
MOTOROLA XOOM 2	8:57
HP TOUCHPAD	8:33
LENOVO IDEAPAD K1	8:20
MOTOROLA XOOM	8:20
T-MOBILE G-SLATE	8:18
ACER ICONIA TAB A200	8:16
SAMSUNG GALAXY TAB 7.0 PLUS	8:09
GALAXY NOTE 10.1	8:00

hours of battery life for the 8.9-inch Kindle Fire HD, one hour less than the 7-inch version. Given that the smaller slate survived nine hours and 57 minutes on the burndown bench we expected something around nine hours flat for the 8.9-inch model. Actually it did better — one minute better, delivering 9:01. (We tested with LTE disabled to better compare with the 7-inch model.) That's over 90 minutes longer than the Nexus 10 managed on the same test (in which we play a looped video and set the display at fixed brightness) and comes in 25 minutes short of our favorite Android 10-incher of the moment, the ASUS Transformer Prime Infinity TF700.

## SOFTWARE

The 8.9 is running the same user interface that the 7-inch model ushered in back in September. Its foundation is Ice Cream Sandwich this time and in general

If you hated Amazon's heavy-handed way of hiding each and every aspect of stock Android you're still going to be mighty unsatisfied here. But, it is at least a lot less sluggish.



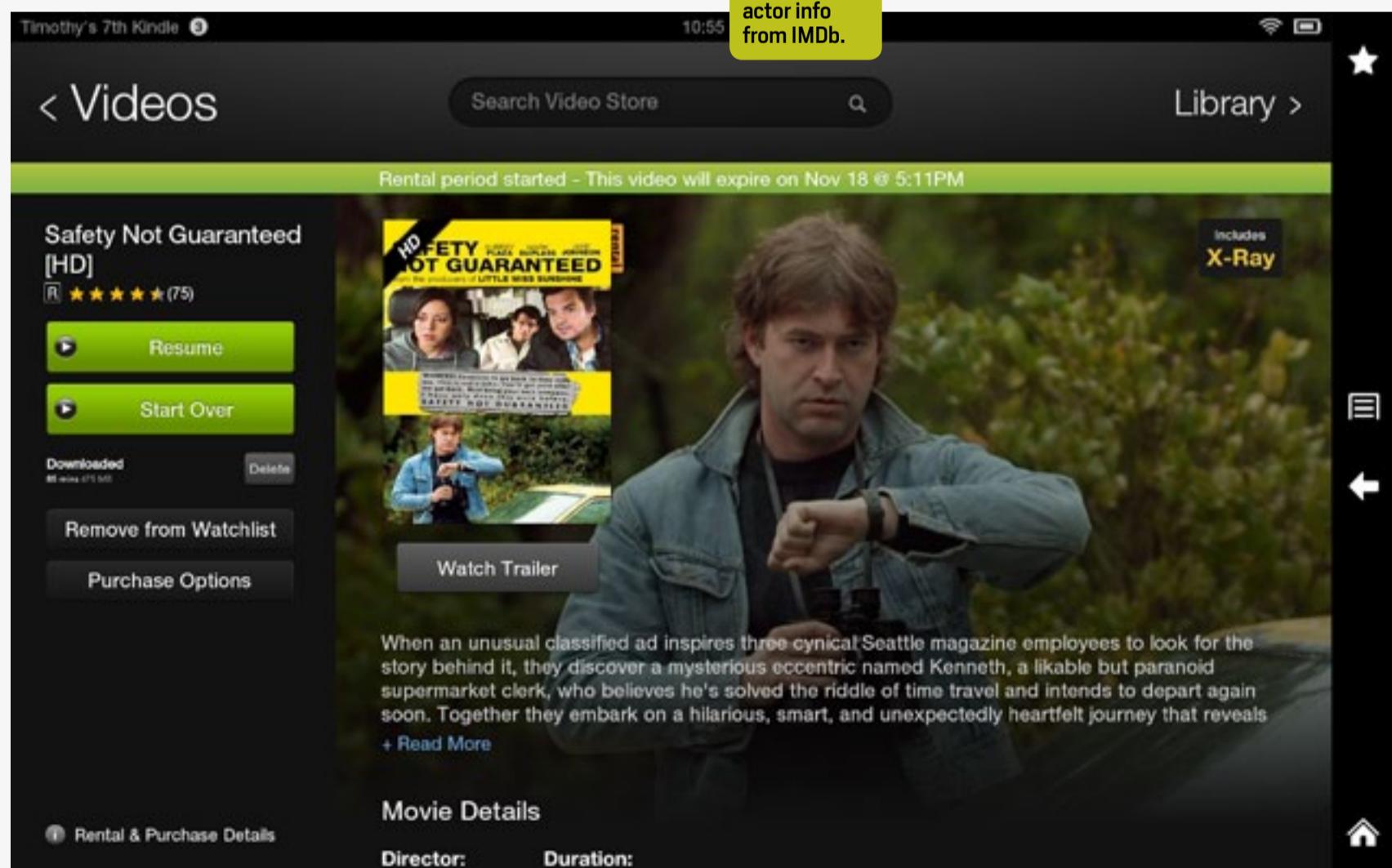
it provides a noticeable step up over the original Fire's interface in terms of usability and responsiveness — but it's still very much the same. If you hated Amazon's heavy-handed way of hiding each and every aspect of stock Android you're still going to be mighty unsatisfied here. But, it is at least a lot less sluggish.

All apps, movies, music, websites and just about anything else you can access on the tablet get added to the main, floating carousel of content in last-in-first-out order. Just about anything you read or play gets pushed on the top of the queue and, with a flick of your finger, you can zip your way through all your recently accessed stuff. If you're the type who tends to jump between just a few things, you'll always find them toward the top.

But, if you're the type who needs to dig a little deeper, you can do that too. Movies, music, books, apps and the rest of your content can be sorted by content type, and in each category you can view all your content that's already on your device and all that's patiently waiting for you in the cloud. Should it be time to summon any of that benched stuff back into active rotation, just tap it and it'll be sucked right down over WiFi or LTE — assuming, of course, said content is less than 50MB in size.

If you're looking for books, music or movies the breadth of selection is impressive. Amazon's partnerships ensure that just about anything that's available for digital consumption will be at your

X-Ray for movies pulls up relevant actor info from IMDb.



# Amazon's partnerships ensure that just about anything that's available for digital consumption will be at your fingertips.

fingertips. That Amazon's prices are generally among the best in the business certainly helps, too.

However, when it comes to that other, crucial aspect of tablet ownership, that wild and wonderful world of the app, the selection is rather more limited. Amazon has managed to get major developers like Rovio to offer their upset fowl for purchase and there are plenty of other top-tier apps on offer. But, it's still a small fraction of those available in the Google Play store as a whole. Yes, you can sideload APKs if you have the technical savvy to do so, but you'll always be locked out of many of the best Android apps out there — most notably Google's own Gmail and Maps.

And then of course there's the Silk browser, Amazon's cloud-accelerated HTML renderer that's supposed to use the power of the crowd to speed up webpage rendering. In the original Kindle Fire we found such claims to be woefully overstated and even the 7-inch Kindle Fire HD rendered pages more slowly than the Nexus 7. That's still

the case, and while the 8.9-inch is an improvement in speed, it's still slower than most comparable tablets, like the Nexus 10.

Since September, Amazon has added a few other tweaks to the OS, including the expansion of the X-Ray function to textbooks, enabling you to get glossary definitions and index locations for those more complicated terms — or just hop over and get their definitions in Wikipedia. This joins X-Ray for movies, which pulls up IMDb info for whatever actors are in the current scene. There's also FreeTime, which gives parents much more control over what their kids can and can't do on the tablet — and for how long they can do it.

Finally, we can't discuss a Kindle's software loadout without mentioning Special Offers. This is standard-issue on all Kindle devices at this point and it turns the tablet's lock screen into a full-page ad for such diverse things as books, video games and shaving cream. In fact, our very first experience upon booting this Fire HD tablet was an advertisement for an Amazon.com credit card. That is what you call a bad first impression.

While they're generally not obnoxious, these ads serve as a constant reminder that this tablet exists exclusively to sell you stuff, and to us that gets a little disheartening after a while. Thankfully, you're never more than \$15 away from stripping the advertising out entirely, and so you can decide whether to keep 'em or kill 'em.



## THE COMPETITION

At \$299 and (way) up, the Kindle Fire HD 8.9 finds itself starting \$100 less than the cheapest comparable tablet, the Nexus 10. For \$100 more you're getting a higher-resolution display and a completely unmolested version of the latest Android operating system. For some that's well worth the additional cost, but if you want cellular connectivity, your decision is easy.

These days you can get yourself a 16GB Galaxy Tab 2 10.1 for the same \$299 price, a tablet with weaker performance and far fewer pixels, but a relatively uncom-

The Fire HD 7-inch and its bigger brother, the HD 8.9.

promised version of Android.

Then there's the Barnes & Noble Nook HD+, similarly 9-inch, similarly 1080p and similarly burdened with a heavily customized version of Android — but starting for just \$269 for the 16GB version and \$299 for 32GB. We haven't had a chance to thoroughly test that model yet, but while we expect the reading and browsing experience to be good, Barnes & Noble's app selection is even more limited than Amazon's, as is its selection of other content. For those who like doing things on their tablets other than reading and web surfing, that's a real drawback.



## WRAP-UP

At \$199, the Kindle Fire HD 7 stacked up squarely against the Nexus 7 and, for power users, that's something of a tough sell. But, with a size and price that slots in well below much of the larger, 10-inch tablet competition, the \$299 Kindle Fire HD 8.9 is more of a difficult proposition to directly compare. So, it's more a question of what does it offer

From \$299+  
you get a  
capable  
tablet with a  
crisp screen.



that its smaller predecessor lacks? The answer, of course, is slightly better performance, slightly more size and cellular connectivity — if you're willing to spend a further \$200.

In general we're quite fond of 7-inch tablets and so, of these two, we'd still take the more portable 7-inch Kindle Fire HD. However, those who need *just a bit* more workspace, or who can't stand to ever be offline from any location, might

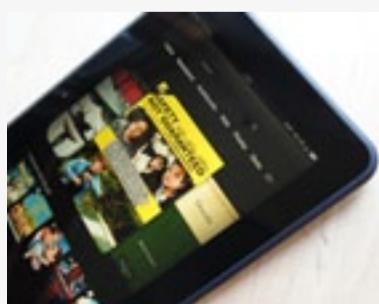
want to consider the 8.9. Meanwhile, if you're a more serious tablet user who wants access to the full power of the Android operating system, the decision is still simple: go with something else. ▶

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*Tim Stevens is Editor-in-chief at Engadget, a lifelong gamer, a wanna-be racer, and a born Vermonter.*

## BOTTOMLINE

### AMAZON KINDLE FIRE HD 8.9-INCH 4G LTE \$299 - \$599



#### PROS

- Bright and beautiful 1080p display
- Great build quality
- Huge selection of content
- Inexpensive base data plan

#### CONS

- Occasional OS stutters
- No access to Google Play

#### BOTTOMLINE

Amazon's Kindle Fire HD 8.9 is slightly larger and slightly faster than the 7-inch version, but other than optional LTE, it doesn't bring much more to the table.



## NINTENDO WII U



Nintendo's **Wii U** is an innovative gaming console with a lot to explore, but is the software experience really ready for prime time?  
**By Ben Gilbert**

**N**intendo's new console is an anomaly in the game console ecosystem, but not for Nintendo. The company that — in just the last decade — popularized stylus-powered gaming, microphone-powered gaming and motion-based gaming, is once again pushing game control inputs forward. And just like its previous consoles, lessons learned from past hardware build the foundation of its latest effort: the Wii U and its bizarre-looking, but conventionally named, "GamePad."

The Wii U console itself, for instance, looks almost exactly like the original Wii. It's longer (10.6





The new, beefed-up central console of the Wii U.

inches vs. 8.5 inches for the Wii), a bit rounder on the edges, and there's an HDMI port out back, but overall it's quite similar to its squatter predecessor. It's enough that you'd get the two confused if they were sitting in the same entertainment center. Naturally, the beefed-up internals and Wii backwards compatibility mean you'll likely be replacing the ol' virtual tennis machine should you choose to pick one up.

Of course, the GamePad is the real star of the show here, bolstered by Nintendo's ambitious "TVii" experiment. Everyone's favorite Italian plumber looks *super* in HD, no doubt, but how software employs the multifaceted touchscreen tablet / traditional game controller hybrid is what really matters. So, how does the Wii U fare? Let's find out.

## HARDWARE: THE CONSOLE

The Wii U is a relatively quiet little box that slips easily into home media centers. Sure, there's a stand (at least in the deluxe set), but we opted to lay it on its side — it takes up less space, and all the writing is geared toward it laying horizontally. How could we disobey the font? It'll take up yet another HDMI spot on your HDTV (a cable is thankfully included in the Wii U box), though component is also an option (sold separately). Think of the ports on the back of the Wii U box as identical to what you had on your original Wii, save for some very small tweaks. For one, the AC power port is slightly altered to account for the Wii U's new, larger adapter. Otherwise, the only difference is the



addition of an HDMI port on account of the console's beefed up internals: an IBM Power-based multi-core processor and an AMD Radeon custom high-def GPU. You can directly plug in that old Wii sensor bar, should you choose to eschew the brand new one you'll get in the box.

There are two flavors of storage as well, with the \$300 model getting just 8GB of internal flash memory while the \$350 model gets 32GB. Not that any of that matters terribly, as both flash and full-on external HDDs are supported. The four USB ports situated around the long black rectangle should provide more than enough support. Should they not be enough, an SD slot sits up front below the optical

The glossy finish is a dust and fingerprint magnet.

disc tray, tucked behind a slidable wall of shiny plastic with two of the aforementioned USB ports. Like the GamePad it supports, the Wii U console is glossy, fingerprint-loving plastic. The dust and cat hair in our test apartment love the exterior of the Wii U. We do not. Unless you live in a dust-less vacuum, there's no way your Wii U console won't exist in a state of perpetual shabbiness. We've had our black deluxe set for a week and it looks as though it's been sitting in an ancient tomb. Finish aside, it's a quiet, sleek black rectangle that takes up little of our precious entertainment center space — you'll find no complaints here.

## HARDWARE: THE GAMEPAD

The Wii U's touch-based GamePad con-



troller has its roots in the Nintendo DS, as evidenced by the GamePad's stylus concept, the aging resistive touchscreen (albeit larger at 6.2 inches, with an 854x480 resolution in a 16:9 ratio) and the microphone residing along the bottom. A player-facing camera — no doubt borrowed from the DSi — sits parallel to the mic, just above that enormous touchscreen. Two Nintendo Wii Nunchuk-esque convex, clickable analog sticks punctuate the left and right sides of the GamePad, and the plus and minus buttons (replacing start / select) from the Wiimote sit along the lower right. The SNES' hallmark four-button layout and d-pad line up on either side of the touchscreen just below the analog sticks. This sure is a Nintendo device, eh? Or is it *every* Nintendo device, all at once?

Of course, the GamePad is more than an homage to Nintendo's previous hardware, and there's plenty new to gawk at — a volume slider controls how loud the GamePad's speakers are, a haloed Home button sits along the bottom (allowing for quick access to the GamePad's settings and the console's main menu) and a red battery light indicates when you'll need a recharge (solid to warn, blinking when death is imminent).

Digital triggers await your pointer fingers on each side around back, with a clickable shoulder button above each (similar to the Xbox 360 and PlayStation 3 controllers). A deep ridge allows you to comfortably hold the hefty, 1.1-pound controller for long periods —

We pulled just under five hours out of it with brightness turned all the way down, the sound off and no rumble, but averaged around 3.5 hours in general use.

not that you'll be using it for much longer than three hours if you don't plug it in. We pulled just under five hours out of it with brightness turned all the way down, the sound off and no rumble, but averaged around 3.5 hours in general use. There's also a power-saving mode which auto-adjusts the screen's brightness based on whatever it's displaying, which seemed to do little in conserving battery life; turning down the sound and keeping brightness at the lowest setting is the best way to extend run time beyond the average, we found. Should you choose to give yourself a break and fully recharge the controller, it'll need around 2.5 hours to re-up.

As for new functionality, there's a spot for NFC connectivity, but we can't test it as no software supports it yet (not even Activision megahit series *Skylanders*). Of course, it's not hard to imagine, say, a Pokémon tie-in down the line, or something else similarly terrifying to parents' wallets. Perhaps the most novel



non-gaming function of the tablet-esque controller is its IR-based universal remote control ability — the GamePad can be used to control your HDTV (well, “most” HDTVs) in some basic, but *very* important, ways. Rather than futzing with several remote controls to turn on your television and game console, the Wii U’s built-in universal remote functionality — which functions whether or not the Wii U itself is powered on — streamlines everything down to just the game controller. Of course, this is no replacement for your Harmony One; in our experience, it was primarily used for powering on the Wii U, the television and switching to the appropriate input / changing volume / etc., and thankfully had little to no impact on battery.

This functionality alone made a huge impact on how we approached the console as part of the entertainment center. It’s also changed our game playing habits quite a bit, as many games on the GamePad screen are mirror images of the TV — we found ourselves indulging ADD and flipping to the evening news while trouncing goombas. It also helps the family dynamic of battling for control of one television. Little Sally can keep playing *New Super Mario Bros. U* while Dad watches Sunday football (or other such situations).

That won’t work with all software, of course, such as featured launch title *Nintendo Land* — a carnival-themed collection of 12 games spotlighting major Nintendo franchises, from *Animal*

*Crossing to Zelda*. It employs all of the GamePad’s gimmicks across its single and multiplayer games. That includes asymmetrical gameplay, wherein what you see on the GamePad isn’t what you see on your television. As such, much-vaunted features like off-screen play work only on a case-by-case basis. (We were unable to test this feature with Netflix, Hulu Plus, Amazon Instant or any other non-game software ahead of launch, as none were available.)

Sadly, overall, the GamePad controller gives off a relatively low-grade impression; it looks and feels like a toy. The four main buttons resemble aspirin pills and aren’t of the polish we expect from modern game consoles; glossy plus / minus buttons accentuate this tragedy even further. Shallow, squishy shoulder buttons akin to those on Sony’s DualShock 3 compare poorly to those found on the current Xbox 360 controller as well as competent third-party equivalents (the Razer Onza, for instance). And the convex analog sticks had our thumbs easily slipping during long *Mario* sessions. The glossy, handprint-friendly, dust-magnet finish on the GamePad isn’t helping its looks, either (we prefer the matte finish on the GamePad’s rear). It’s not all bad — the d-pad is as solid as ever, and the clicky digital triggers work beautifully (as long as you’re not playing an FPS or a racing game, that is). The GamePad’s comfy, too, despite its weight and size. If only it’d go further from its home





The Pro Controller has a decent heft and works well.

base console than the 26 feet Nintendo's promising.

Yes, we tried bringing the Wii U GamePad everywhere, but Nintendo's (admittedly conservative) estimation is pretty spot-on — the streamed video that the Wii U pushes to its GamePad wouldn't go very far at all without running into hiccups or cutting out altogether. That isn't to say we encountered issues within that estimated distance — in fact, streaming worked flawlessly — but don't expect to sneak in late night gaming from your bedroom while the Wii U sits quietly across the house. Though folks in more rural areas may fare better, our NY-based test apartment with three

wireless devices (aside from the Wii U) wouldn't allow anything beyond 20 feet or so. Within that range, though, the Wii U magically streams hiccup-free gaming to both the GamePad's screen and an HDTV — no small feat, and one that opens up a Pandora's box of ideas for both game developers and media providers.

## HARDWARE: THE PRO CONTROLLER

The Pro Controller is a Nintendo-crafted hybrid of the PlayStation 3's DualShock and the Xbox 360's controller. It's got a good heft, but isn't too heavy, and sadly features the same glossy plastic and cheap buttons we've





already complained about. Perhaps Nintendo wants our consoles and their accessories constantly looking dirty? It rumbles as you'd expect and functions admirably in time-sensitive situations (such as *Ninja Gaiden 3*). Also expected: its battery lasts much, much longer than the GamePad, with ours holding charge anywhere from six to 10 hours before needing a plug in. Unlike the GamePad, which requires a wall charge directly, you can simply plug in the controller into the console via USB and continue playing while charging.

This charging cradle will be your GamePad's new BFF.

## HARDWARE: THE CHARGING CRADLE

Surprisingly, there's a lot to be said for the convenience of the Wii U's GamePad charging cradle. Rather than fussing with wires that connect to an otherwise wireless console, you simply place the GamePad in a comfy dock, no connection required (à la the 3DS charging cradle). It comes with its own AC adapter and doesn't actually require a physical plug into the GamePad — the controller charges via touch points rather than a plug (again, in around 2.5 hours). If *Nintendo Land*'s discounted



price and the larger internal storage haven't already sold potential buyers on the deluxe Wii U version, the cradle (otherwise sold separately for \$20) absolutely should. It's a small convenience, but quite a nice one.

## SOFTWARE

We can't share the same positivity about the mostly unchanged UI — it's a simplified version of the user interface we got to know in the original Wii. Movable, rounded square tiles (five across, three down) represent the entire experience, aside from the ability to swap between your user's Mii walking around a plaza and the tiles. Nintendo plans to populate this plaza with your online friends (and news from its SpotPass feature), but we were unable to use this feature ahead of launch. Logging in with your Mii is a snap, and you can set a particular one to default login on boot. Logging out and switching users is as simple as tapping the user icon in the upper-left corner of the UI and selecting another user — simple, intuitive and quick.

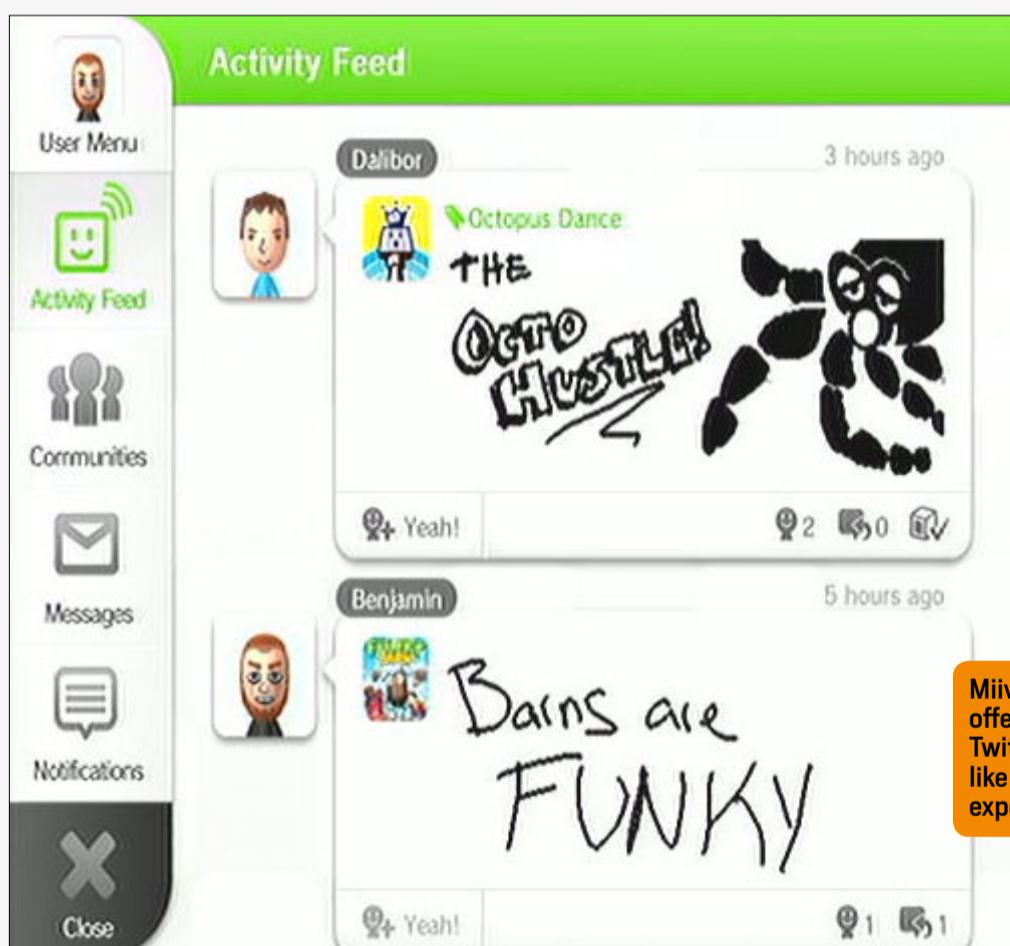
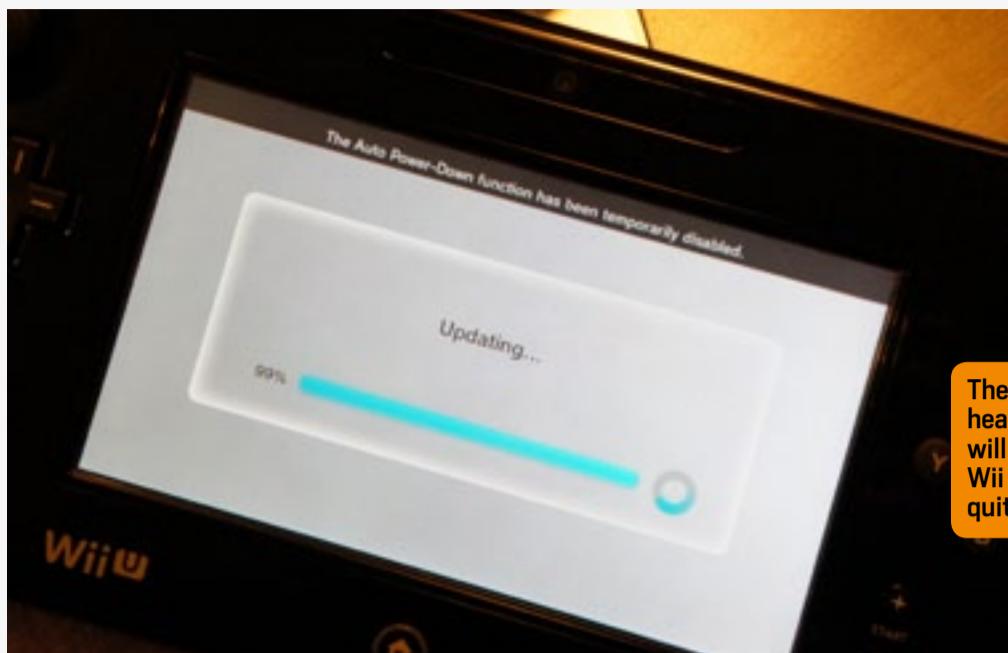
During our pre-launch update preview, what little there was in terms of available non-game software loaded surprisingly slowly for a brand-new console. Opening the Mii Maker, the System Settings, Daily Log or the Parental Controls required a roughly 15-second wait while the application loaded (yes, we timed it), and backing out takes about as long. When you do

We can't share the same positivity about the mostly unchanged UI — it's a simplified version of the user interface we got to know in the original Wii.

enter any of the applications, there's only so much to do — the Mii Maker functions much like that of its 3DS equivalent, matching up a camera scan of your face with an approximation or allowing you to import one from other Nintendo consoles (3DS included). You can also create your own from scratch, should you be so inclined.

The Daily Log shows a breakdown of your daily actions on the Wii U, as well as per game, so you can find out exactly how much of your life you've spent trying to find various incarnations of the Triforce. Parental Controls mostly allow for enabling or disabling the Wii U's various features — accessing non-game entertainment, or Miiverse, or the eShop — as well as an ESRB-based blocking system for games. System Settings is where you'll go for data management (such as transferring your old Wii data over), but also where you'll go to tweak the settings you arranged in initial set-up (wireless networks, date/time, etc. — basic system-level stuff). Most im-





portantly, it's where you can recalibrate your GamePad and sensor bar should there ever be an issue.

## LAUNCH DAY FIRMWARE UPDATE

Here's hoping you've got a strong internet connection, as the first thing Nintendo hopes you do with your Wii U is download a massive firmware up-

date. Beyond just a slew of online services (Miiverse, Nintendo Network, the eShop, an internet browser, Wii U chat and Netflix), the update adds the ability to use external storage (up to 2TB) and play original Wii games. Kind of a big deal! As such, we spent a full two days exploring all that new functionality.

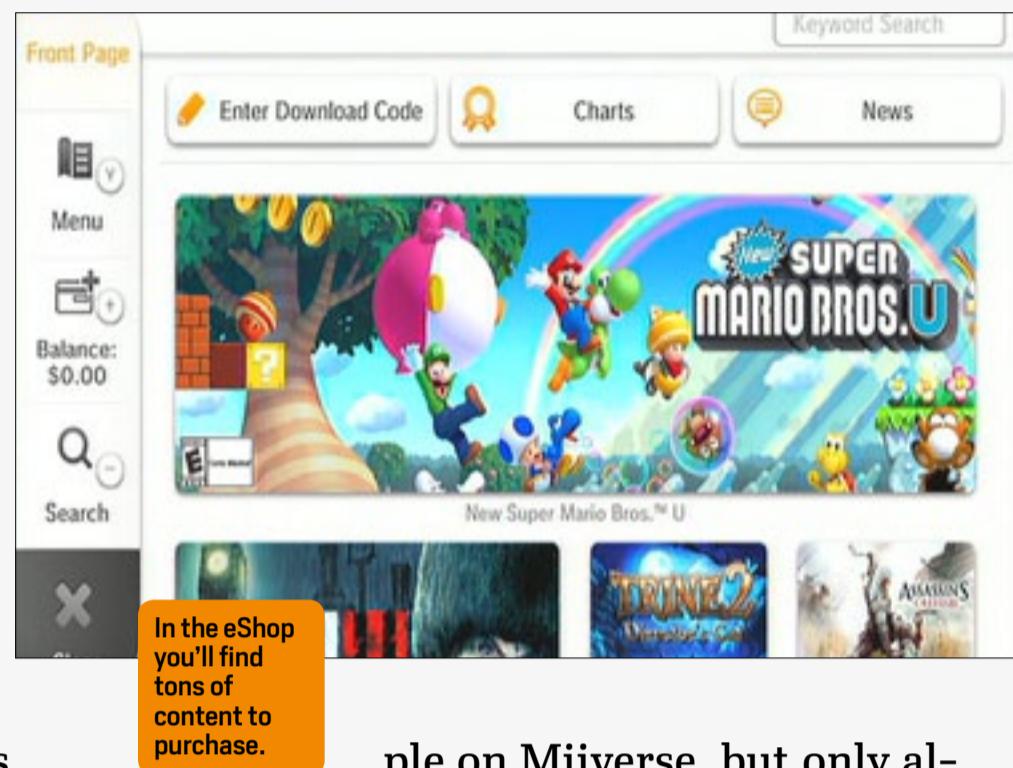
## MIIVERSE / FRIENDS LIST

Part Twitter-alike, part forums, Miiverse is the path to meeting new online friends who share your interests and bragging to existing ones about your accomplishments. The network is divided into forums based on existing software (including a Netflix forum) and it's moderated pretty heavily. You'll see lewd drawings pop up now and again (yes, you can draw black-and-white images), but it's impressive how civil the discourse has become since launch. Some games suggest posting in the Miiverse after a particular accomplishment (*New Super Mario Bros. U* prompts that posting almost constantly, so you may want to adjust your settings accordingly). Sadly, the service's social functionality barely scratches the surface of what most so-



cial networks offer. Profiles are shallow and offer little tie-in with the service's own namesake, Nintendo's Miis (outside of WaraWara Plaza, but we'll get to that in a moment). Worse, none of the system's similar functionality works in tandem with Miiverse — video chat is an entirely separate application, as is the Friends List. Even a simple thing like system-wide in-game screenshots or video that could be shared aren't present — concepts already delivered on several competing consoles.

Another function of the Miiverse is sending friend requests — Nintendo thankfully replaced its clunky "friend code" system with a much simpler concept: the Nintendo Network ID. When you first sign into your local WiFi network, the Wii U prompts users to set up the NNID. It's essentially identical to Microsoft's "Gamertag" concept. Bizarrely, the Wii U's friends list (separate from Miiverse) doesn't allow for direct friend requests to be sent; instead, you can "register" friends within the friends list who can then "register" your name, thus making you both friends. At no point does the Wii U actually tell either party that the other person registered you. You can, however, send a direct friend request by looking up a friend's profile in the Miiverse. Making things even more confusing, you're allowed to "follow" 1,000 peo-



ple on Miiverse, but only allowed 100 "friends." Following someone simply means you'll see their updates in Miiverse, whereas being friends allows for online multiplayer, Wii U Chat and more. It's a distinction you have to figure out for yourself, and it's poorly implemented — in so many words, the friends / followers situation is a total mess. We like using Miiverse, and we like using the Friends List, but their interoperability needs to be hammered out. Quickly.

## THE eSHOP

The eShop is the only one of the additions included in the Wii U update that we're universally positive on. It's a huge (huge) step up from the 3DS' eShop, and purchases are a snap. More importantly, the storefront is full of great featured content (including many major retail games — a bold move on the digital front) and search is quick and easy. Navigation is all handled, like Miiverse, via several contextual





virtual buttons along the left side of the screen. The main area is comprised of hotlinks directly to game pages or various game categories — there's even a prominent indies section. The charts section is the eShop's only real failing, as it's currently busted. We can't imagine it'll stay that way forever, of course.

## THE WEB BROWSER

Game consoles are notorious for terrible web browsing experiences. The Xbox 360's recent addition of Internet Explorer is no exception, and both the PlayStation 3 and Nintendo Wii are no better. While the Wii U's browser is vastly superior to its competition (it's speedy and it features tab browsing, bookmarks and built-in Google / Yahoo search), it's no match for using a browser on a computer or tablet. Heck, it's not even a good replacement for web browsing on most smartphones. The Wii U's browser will work in a pinch mid-game, but it's not what we'd call

ideal for anything longer than a few minutes.

## WII U CHAT

Wii U's video chat functionality is a fun diversion, but little more. Calls must be prearranged, as there's no system-level way of knowing you're getting rung unless you're already loaded into the application. If someone on your Friend

List isn't around, you sadly can't leave a message (though it thankfully records the missed connection in your buddy's Miiverse notifications, as well as in the Wii U Chat app). It also can't be used to send video messages directly. When you do get on a call, you've got a few basic options for directing where each person's visage is displayed, as well as the ability to draw on each person's face in a variety of colors. Stills can't be grabbed from within the video, nor can entire videos be saved directly to Wii U storage. Again: fun diversion, but little more.

## BACKWARDS COMPATIBILITY

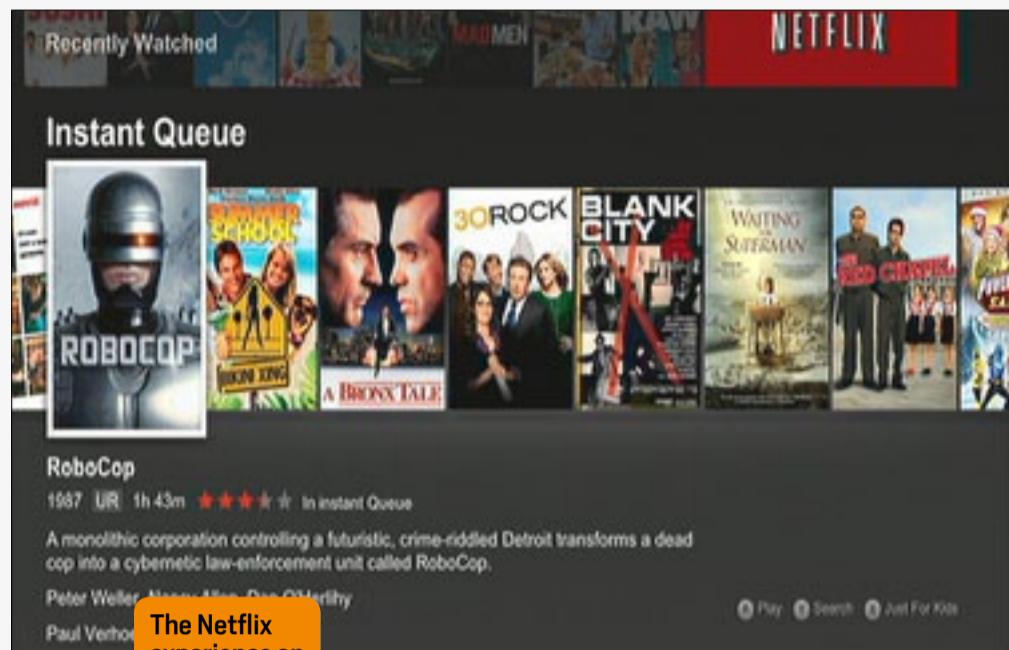
Offering what is essentially a virtual Wii console built into the UI is perhaps a strange way to handle backwards compatibility on the Wii U, but it works without issue. Well, one issue: the system requires a full restart to use the Wii's functionality (including its Virtual Console, Wii Shop Channel and Wii System Transfer application). The



same can be said for returning to the Wii U dashboard, with a full 30-second switchover each time. If you want to play your Wii games on Wii U, you'd better really want to play them. Of course you can always bring all that content over and play Virtual Console / WiiWare games right through your Wii U dash, though you'll still have to load into the virtual Wii for disc-based Wii games.

## WARAWARA PLAZA

Though WaraWara Plaza wasn't specifically part of the launch day update, it's finally comes to life with the addition of various social features and, more importantly, other humans. Miis flood the plaza, flocking to a handful of different game-based areas, with content floating above actual peoples' Miis based on what they've posted to the Miiverse. If nothing else, WaraWara Plaza makes the Wii U feel like a truly connected console, and does a great job of showcasing what the greater Wii U-owning public is playing at the moment. It seems like an area ripe for "discovery" experiences — like budding sketch artists drawing followings from people seeing their work and then zooming in on that Mii and "following" them in Miiverse. The Plaza also serves as a perfect excuse to leave your Wii U on even when you're not playing games — something Nintendo assured-



ly hopes you'll do. WaraWara Plaza is one of several small but important steps Nintendo's taking with the Wii U in bridging the gap between us geezers and the generation that grew up with Facebook.

## NETFLIX

There's no excuse for the lazy execution of Netflix on Wii U. It's as slow as ever to navigate (and load, like most Wii U apps), and the second-screen functionality can only be described as barely there. Outside of basic pause / play / etc. functionality, the GamePad displays information about whatever you're watching but won't allow browsing of the Netflix library, or queuing up what you'd like to watch next, or ... well, anything beyond very basic functionality. Yes, you can pull down video and watch it right on the screen — pretty neat, but something that many handhelds already accomplish swimmingly. That a 6.2-inch touchscreen game controller is going more or less un-utilized by Netflix



is incredibly disappointing.

## GAMES

With 23 games to choose from initially, and even more in the “launch window” (ending March 31, 2013), the Wii U’s arriving at retail with a huge presence. Of course, only a small handful of those 23 are worth plunking down your \$60 for — they’re still launch titles, after all — and we’ve got a few suggestions.

### **New Super Mario Bros. U**

Obvious? Yes. Delightful? Also yes. *New Super Mario Bros. U* is Mario’s first big HD outing, and he’s looking incredible, as are Bowser’s airships and Yoshi’s big, goofy face. Beyond being a great showpiece for your new console, *NSMBU* is an excellent Mario game. It’s nowhere near as innovative as series standouts like *Super Mario World* (an SNES launch title) or even *Super Mario 64* (an N64 launch title), but it’s a heck of a lot better than recent NSMB entries (we’re looking at you, *New Super Mario Bros. 2* on 3DS).

### **Nintendo Land**

If you’re wondering what the Wii Sports of Wii U is, *Nintendo Land* is it: the game serves as a glorious demonstration of the unique controller’s many, many functions, and offers a preview of what other creative ideas will assuredly spring up over the next several years. More importantly, *Nintendo Land* helps prove that the GamePad’s

Miis flood the plaza, flocking to a handful of different game-based areas, with content floating above actual peoples’ Miis.

more than just a mixed bag of legacy functionality and emerging tablet fads — the tilt sensor shines in *Captain Falcon’s Twister Race*, and the whole “second screen” idea works beautifully in *Luigi’s Ghost Mansion*. It’s easy to forget how cheap the overall build of the GamePad feels when you’re enjoying totally new gaming experiences with it. *Nintendo Land*’s demonstrative abilities are a necessity when buying the new console — the game alone sells the deluxe set, as you’d pay more for the game and regular bundle separately.

### **ZombiU**

Ubisoft Montpellier’s long-in-development Wii U zombie shooter matured considerably since its initial unveiling as “Killer Freaks From Outer Space.” The freaks are now the undead hordes of London, post-zombie apocalypse, and you’re an unwitting survivor struggling to hang on. Rather than gleefully taking to heavy weaponry, you’ll be employing survival skills more than anything else — weapons (and ammunition) are at a minimum, and the GamePad’s second





The Wii U Deluxe Set [charging cradle not shown].

screen is employed smartly as a map / backpack (as well as lots of other neat tricks that you should really just see for yourself). *ZombiU* also serves as a showcase of the system's non-cartoon HD ability (some up-close textures reminded us this is still a *launch game*, sadly). Be warned that it is also relatively *terrifying*, though we scare easy.

## PORTS

Wii U's launching with a variety of ports from current Xbox 360 and PlayStation

3 games, such as *Mass Effect 3* and *Assassin's Creed*

3. The vast majority of this holiday's big games are being ported (as well as some of last holiday's, like *Batman: Arkham City Armored Edition*). None of these are developed with the Wii U in mind, though some have additional content or new ways of interacting with existing content. If you're dead set on only playing Wii U games this holiday, then these might be your only way to check out some great games. That said, there's



little benefit to playing them here over other consoles — and if you're into multiplayer, there's an argument for existing consoles having more online players (based solely on install base).

## WRAP-UP

Nintendo promised consumers a modern HD gaming console, and the Wii U delivers on that promise ... in some respects. Games look gorgeous (HD *Mario!*), the risky controller is another successful control innovation and there's a ton of promise on the horizon. But there are also some major missteps and half-baked ideas: a befuddling Friends List / Miiverse connection, a complete lack of many system-wide console standards (group chat, achievements, the ability to play non-game disc-based media) and a game controller battery that lasts only 3.5 hours.

It's for these myriad reasons that we can't suggest buying Nintendo's Wii U just yet. It's a complex, innovative console that feels a few months short of primetime — what's there is compelling, but its novelty will likely wear off with folks used to their consoles doubling as media centers; Nintendo promises its TVii functionality will launch next month, which could change this equation dramatically. For now, it won't hurt to wait a month or two until the stocks replenish and Nintendo finishes its launch. 

*Joseph Volpe contributed to this review.*

*Ben Gilbert is a Senior Associate Editor at Engadget, where he tends to write about video games. He loves a great breakfast, is obsessed with media, and recklessly employs serial commas.*

## BOTTOMLINE

**NINTENDO  
Wii U**  
**\$300+**



### PROS

- Innovative, comfortable controller
- Backward-compatible with last-gen Wii
- Off-screen play fundamentally changes console gaming

### CONS

- Incredibly short battery life on GamePad
- Slow, antiquated UI
- Confusing social functionality

### BOTTOMLINE

Nintendo's Wii U is full of promise, but it may have launched prematurely. Longtime gamers will want to snap one up immediately, but mainstream users should wait a few months before diving in.



# A PERFECT MATCH

PC GAME  
DESIGNERS

AND

THE QUEST  
FOR  
COMPATIBILITY

BY JASON  
HIDALGO

**Making games for computers** is apparently akin to churning out sausage. For the most part, consumers are privy to the final yummy-looking package, give or take the occasional wandering bug that decides to crash their gaming spread. Underneath all that sumptuous, juicy meat, however, is a healthy helping of mystery meat. This includes the amalgamation of hours upon countless hours of the proverbial blood, sweat and tears





SCREENSHOT FROM  
GUILD WARS 2'S EIGHTH  
PROFESSION REVEAL:  
THE MESMER.

piled up by the modern-day artisans who ply in the video game trade. At the top of their list of concerns? Making sure a game works across the multitude of computers that proliferate out in the wild.

With the industry essentially settling on NVIDIA and ATI (AMD) these days, the narrowing of card choices to two brands has made working on compatibility “a little easier” than it used to be, said Travis Baldree, president and lead engineer for Runic Games. Note he said “a little easier” not “a cakewalk.”

“Compatibility is always the biggest challenge — it isn’t a new problem at all,” Baldree said. “The sheer number of permutations of cards, drivers, devices and third-party software — and their unexpected interactions with one another — can be a trial to deal with.”

## A MULTI-HEADED BEAST

For PC gamers, a gaming rig is like the nerd equivalent of a fashion statement. Whether it be their choice of processor or the pièce de résistance of every gaming setup: the



**“WITH PCS,  
CUSTOMIZATION IS ONE  
OF THE PLATFORM’S  
BIGGEST STRENGTHS,  
BUT IT CAN ALSO BE ONE  
OF ITS GREATEST  
WEAKNESSES.”**

— CHAD TAYLOR

video card, they aren’t shy to wax poetic about their beloved systems in online forums. The wide array of customization and upgrade options is one reason some hardcore users thumb their noses at video game consoles. For game developers, however, it makes striving for compatibility a much bigger challenge than matching shirts and pants.

“PCs are wonderful devices because you can tinker with them to your heart’s content — souping them up, making them cooler looking and customizing them to your own personal needs,” said Dave Georgeson, director of development for Sony

Online Entertainment, which counts *Planetside 2* and the *Everquest* franchise among its list of properties. “However, this also results in many thousands of possible combinations and elements. Compatibility testing ... against as many of those permutations as possible is almost impossible to do perfectly.”

Georgeson said you need a slew of computer pieces — video cards, sound cards, motherboards, CPUs, RAM sticks, operating systems — if you want to assemble the requisite systems to test against. It’s an effort that not only takes money but also valuable time, especially if you have to assemble and disassemble rigs when accounting for all sorts of configurations. This explains why you will almost always find people having issues with their game for every new product launch, according to Georgeson.

In many cases, problems occur when hardware and software pair up in an awkward, virtual rendition of the tango. The launch of Sega’s *Phantasy Star Online 2* massively multiplayer online role playing game (MMORPG) in Japan this year served as a perfect example. The game, which also has a sizable foreign player base, saw people from its Japanese and Western communities frequently





THE VARIETY OF GAMING PCS MAKES OPTIMIZATION A HEFTY TASK.

the PC platform will look in two years or more. Making a game takes a lot of time and the constant arms race between processor and video card manufacturers to outdo

reporting issues involving its use of anti-cheating software nProtect GameGuard in the months following its release. Issues ranged from the inability to launch other programs while playing the game to not being able to launch *Phantasy Star Online 2* at all after a GameGuard update. The problem was serious enough that the update was rolled back.

Gamers with 64-bit Windows were especially affected although other 64-bit Windows users reported being able to play the game with no problems.

“Any combination of hardware and software can end up causing unique problems and players don’t always have a good grasp on the impact their customizations have on their systems,” said Chad Taylor, lead engine programmer of ArenaNet. “With PCs, customization is one of the platform’s biggest strengths, but it can also be one of its greatest weaknesses.”

## BALANCING ACT

In the journey towards PC game compatibility, the first step involves a healthy dose of prognostication. The first challenge is to predict how



the competition in terms of speed and performance means that hardware will be more powerful by the time a project is ready to launch. For game creators, optimizing a game to take advantage of that hardware is part of the development process, particularly when determining the ideal specification or “target spec” for running a game.

**“TO A CERTAIN EXTENT,  
IT’S A PROCESS OF  
DRIVING THE BUS OVER  
WEAKER AND WEAKER  
BRIDGES UNTIL ONE  
OF THEM COLLAPSES.”**

— TRAVIS BALDREE

“It’s much more of an art than a science and you have to guess based on everything you know when the game is being conceived,” said Georgeson. “Guessing wrong with this can cause crippling limitations in your engine if you rely on tech going a certain way and then it doesn’t, or if you assume that speeds will go way up and then they don’t.”

Sometimes, the development cycle can also throw a wrench in a firm’s plans. When ArenaNet started work on *Guild Wars 2* in 2007, it penciled in a 2010 release date and targeted what it thought would be

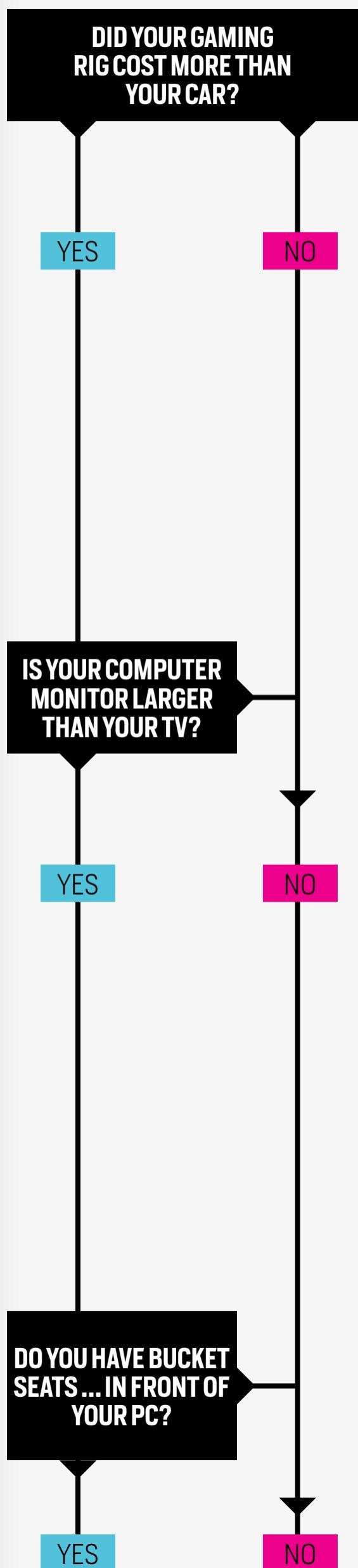
mid-range hardware for that time period. The game ended up being released in 2012.

In addition to their target hardware, developers also need to decide on a minimum specification or “min spec” for running their game. This presents its own challenges and headaches but is necessitated by economics.

“It’s the slowest, most annoying system that you intend to support with your game,” Georgeson said. “[You have to] figure out how far back in time you’ll want to support [hardware] in order to get the biggest audience share you can get.”

Defining min spec is subjective and varies from company to company, Georgeson said. Some consider it the minimum specification to run a game at a decent frame rate with enough features turned on so a game still looks good aesthetically. Others consider it the minimum requirement for running a game regardless of performance.





“To a certain extent, it’s a process of driving the bus over weaker and weaker bridges until one of them collapses,” said Baldree. “[When it does] that one is right below the minimum spec.”

Catering to the “haves” and the “have-lesses” of PC gaming can be a sensitive balancing act for developers eager to get their wares to as many customers as possible. In a sense, it’s an exercise in gaining goodwill, which is an essential component for any title to have longevity.

“We want players with a 5-year-old PC to be able to play our game but we also want to reward those who’ve gone the extra mile and built an awesome gaming rig,” Taylor said. “This proved to be a formidable challenge [for *Guild Wars 2*] considering we have three very different game types — player vs. environment, player vs. player and world vs. world — that we’ve had to optimize differently for each.”

## GETTING DOWN AND DIRTY

Once the target specs are dialed in, the nitty gritty of optimization and compatibility truly begins. The first step always involves gathering information, according to Taylor. Usually, this is done by instrumenting code to ensure that things are executing as expected while also figuring out what aspects of the game the development team is spending the most time on. Taylor said having this kind of data is crucial because optimization and compatibility is completely reliant not just on knowing what problems exist but also understanding the root of those issues. Making changes without understanding those problems can often make things much worse and even create new headaches. Development teams also keep test rigs on the floor, including a min spec system that’s used periodically to ensure the game isn’t “running stupidly slow,” said Georgeson.

One common misconception is that game optimization woes always involve code-related issues. Taylor, however, said that isn’t always the case.

“It could be caused by an over-ambitious artist or designer who didn’t realize that their cool, new thing



ARE YOUR HOT KEYS  
CUSTOMIZED?

YES

NO

was causing a problem,” Taylor said. “For *Guild Wars 2*, we wrote a suite of tools to measure many different aspects of performance and made sure that many of these tools were accessible and usable by non-engineers. This fostered a strong studio discipline that optimization was everybody’s responsibility.”

For smaller teams such as Runic Games, which has a staff of 30 people, one approach to optimization and compatibility is to keep things simple. *Torchlight 2*’s “Dynamic Lighting” feature, for example, doesn’t use actual lighting. Instead, developers took advantage of the game’s isometric nature to project a faux lighting scheme downward onto the playfield while using tech that worked fine in DirectX 7, which was first released in 1999.

“We try not to introduce too much technical complexity as far as shaders or advanced hardware features because, for a team our size, those become difficult to maintain and thoroughly test,” Baldree said. “We tend to fall back on a lot of tried-and-true methods to get what we want.”

## IT TAKES AN ONLINE VILLAGE

Even with all the tools at their disposal, companies can only do so much optimization and compatibility work on their own. Ultimately, the best way to simulate a real-world environment is to use actual players through alpha and beta tests prior to a game’s release.

“You can create automated tests — which we do — where thousands of bots move across the world doing random things, but bots are so predictable and players are not,” Georgeson said. “The tiniest little nuanced things in a game will change the course and behavior of players versus what you expect to see from bot behavior. The only real way to do these kinds of tests is a massive player beta.”

Betas are especially useful for testing scalability, which Baldree describes as the biggest challenge “hands down” when testing optimization and compatibility for MMORPGs. Scalability for an MMORPG typically involves a two-axis approach.

“The first axis is the ‘massively’ part ... where you

HAVE YOU BEEN IN AT  
LEAST ONE CLOSED  
BETA TEST?

YES

NO



DID YOU DONATE TO  
STAR CITIZEN?

YES

NO

need to handle rendering and animating detailed environments filled with dozens of players fighting waves of enemies — all of which are firing off various attacks and effects,” Baldree said. “The second axis pertains to the vast array of hardware our players are running the game on and trying to balance the visual fidelity with the underlying hardware’s horsepower.”

To identify issues, developers like Runic Games set up a crash uploader during this point to find out what kinds of problems players are having. ArenaNet, meanwhile, said it works closely with hardware companies to ensure their game runs well on their equipment. Sometimes, this can even lead hardware companies to issue updates such as new drivers. The alpha and beta phases are also when SOE runs its games through a “compatibility lab” for hardware testing.

“The lab is where a bunch of guys with racks and racks and racks of hardware start building systems, check the software against it, jot down notes and compile reports to send back to the team,” Georgeson said. “Then that horrible day arrives where the team has to look at that report, cringe and try to find time to fix all those issues before moving to the next phase of the process. These problems are always annoying because they’re hardware-specific.”

A typical approach to hardware testing is to focus on the most prevalent setups first. These include name-brand computers, pre-configured systems and the most popular video and sound cards. The more a rig moves away from those configurations, the more likely it is for a player to see issues because the game likely wasn’t tested on that system, Georgeson said. Laptops are also especially problematic because manufacturers tend to cut corners to achieve their minimized chassis profile.

“This can result in lots of problems — plus laptop users can’t usually upgrade their video card so they’re at the mercy of whatever was put onto the motherboard,” Georgeson said. “On all systems, there are motherboard-based graphics chips that are also a pain in the butt, but those shall remain nameless.”

ARE YOU A LEVEL 90  
ANYTHING IN WoW?

YES

NO

YOU ARE  
ELITE.

TEMPLE  
RUN IT IS  
THEN.



## NEVERENDING STORY

Despite developers' best testing efforts prior to release, problems almost always still happen during a game's launch. For starters, even a massive beta can fail to accurately simu-

late player behavior after release. During a beta, for example, players tend to do a lot more exploration, Georgeson said. Once a game launches, however, players develop a more winning-oriented mindset and start playing a different way.

"Predicting exactly what you need at launch is extremely tricky and companies get it wrong a lot," Georgeson said. "Experienced companies are getting it right more and more often as they launch successive products, but it should never be a surprise when a new company gets it wrong and then scrambles to

make it right immediately after launch."

Even problems that just impact one in 1,000 gamers can be a big issue when you have a popular game that has sold millions, Taylor said. In some cases, the biggest challenge involves PC gamers with powerful rigs. During the beta for *Guild Wars 2*, for example, the earliest complaints that ArenaNet received came from players who were unhappy that they were only getting 30 to 40 frames-per-second on their system. Ironically, some of the dissatisfied players had hardware that was vastly superior to anything the company had set up in its studio.

"Players with gaming rigs have much higher expectations and ... tend to be a far more vocal crowd," Taylor said. "Often, they have spent large amounts of money for cutting-edge hardware and they want to see 60-plus frames-per-second. It was a new challenge that we hadn't anticipated and, at the end of the day, it just required a bit of elbow grease to work out the bottlenecks."

Despite myriad challenges involved in PC game develop-

**"PREDICTING  
EXACTLY WHAT YOU  
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AND COMPANIES GET  
IT WRONG A LOT."**

— DAVE GEORGESON



ment regarding optimization and compatibility — particularly in contrast to consoles or even a closed computer system such as the Mac — the developers still profess their undying love for the platform. Development tools are amazing for the PC and make debugging and developing much less of a chore, Baldree said. For Georgeson, PCs also aren't as technically constrained as consoles and can be pushed much harder.

Given the constant evolution of the PC platform, developers will be faced with even more challenges moving forward, albeit exciting ones. The promise of the peripheral cloud and potentially playing anywhere could really take gaming to the next level in terms of growth, Georgeson said. ArenaNet's Taylor said he's looking forward to hardware makers fully unlocking the potential of parallel computing — a trend that he feels was kicked off by the PlayStation 3's Cell architecture.

"In the past, one of the PC's biggest bottlenecks has always been trying to get data off the hard disk drive but with the advent and iteration of solid-state drives, we are going to be able to feed these parallel processors at an enormous rate," Taylor said. "This paradigm shift ... is going to catapult mainstream technologies to near realistic levels. Large streaming worlds are going to be able to reach entirely new magnitudes of expanse and detail."

At that point, optimization and compatibility will still continue to be a daily grind just as it is now. For developers, it simply is the nature of the gaming beast. Even after a game launches, the quest for compatibility and optimization is truly never done. In Runic Games' case, Baldree said they still spend time tracking down obscure driver and software conflicts long after a game has released. SOE, meanwhile, has been working on *Everquest* and *Everquest II* for a combined development time of 25 years.

"Games, like art, are never done," Georgeson quipped. "They just ship." 

---

*Jason Hidalgo is a Contributing Editor at Engadget who has won national and international awards for business and health reporting.*



# FSC

VISUALIZED

DISTRO  
11.30.12

## ELECTRIC ORANGE



Photographer Caleb Charland believes that “energy is the source of all true art and science” and his photographic experiments exhibit this sentiment quite clearly. Galvanized nails, copper wire and orange wedges serve as the framework for this citric acid-powered LED illumination. A healthy dose of patience was required as well, since it took 14 hours of exposure to capture this sunny simulacrum.

PHOTOGRAPH BY CALEB CHARLAND



## DISTRIBUTED



**THE HOST OF ZEEBOX'S #YAPFFACTOR and BBC Radio Leeds presenter talks about his NAS, nighttime disconnections and camping emergencies.**

**What gadget do you depend on most?**

Probably my Samsung 7.7 tablet. Everyone has more or less given up trying to phone me now, which is great. I use it to stay in touch.

**Which do you look back upon most fondly?**

It has to be my hand-held *Donkey Kong* from Nintendo circa 1983. I played it so many times I could

do the first run up to the top with my eyes closed. I probably still could.

**Which company does the most to push the industry?**

Well, I still have a soft spot for Archos. I was using their video players years before anybody else caught up with them. The build quality used to be appalling, but they did it. Creative have gone a bit quiet — aren't they making organic computers or something loony now? I expect their next MP3 player will look like a handful of frog-spawn.

**What is your operating system of choice?**

For audio work — Mac. For mobile — Android. But I hate the smugness of Apple. I used to do a routine about PCs vs. Macs.

**What are your favorite gadget names?**

Bongo (although that's the name of my vehicle, which may be stretching the "gadget" brief). I



**“... Nothing kills a witty voicemail message more than leaving an extra 18 seconds of tapping noises while you try to hang up.”**

like that the hard drive I attached to my parents' TV has been labeled "The Magic Box" by my mum. I loaded it up with crappy old film noirs and she loves it.

**What are your least favorite?**  
Anything prefaced with an "i" or an "e."

**Which app do you depend on most?**  
I love the DS apps that let me stream music and download files from my Synology NAS. That is truly a magic box.

**What traits do you most deplore in a smartphone?**  
No physical "end call" button. My girlfriend and I regularly find ourselves punching our phones. And nothing kills a witty voicemail message more than leaving an extra 18 seconds of tapping noises while you try to hang up.

**Which do you most admire?**  
I like being able to share funny

things I've seen easily and quickly. I wish video uploading was a bit better, *quicker*, easier.

**What is your idea of the perfect device?**

An internet-connected portable Sky box that also works as a fully formed DAW, MP3 and video player and dispenses warm vegan chocolate brownies.

**What is your earliest gadget memory?**  
I had, still have, in fact, a sort of bunny rabbit doll with a tiny music box inside. It used to play "Rock-a-Bye, Baby" and the winder was sort of broken so only my dad could wind it. I used to use it as a pillow and I loved listening to the gurgles and whirrs of the flywheel inside. I thought it was stupendous.

**What technological advancement do you most admire?**

Probably MIDI, now that I think of it. Although the technology is the same, fundamentally, as a music box or a fairground organ — it's made so much possible in the world of music.

**Which do you most despise?**  
People expecting to be able to get hold of you all the time.





The versatile  
OP-1 synth  
and sampler  
from Teenage  
Engineering.

### **What fault are you most tolerant of in a gadget?**

Bad output resolution. I'm all about the input quality. I'd take a device that had a screen resolution of 240 x 120 if it could capture HD.

### **Which are you most intolerant of?**

Slowness. Especially in phones.

### **When has your smartphone been of the most help?**

When I used it as a torch when I went camping and had to poo in the woods at 3AM. Forget GPS and 4G. THAT'S when you really need some good basic technology.

### **What device do you covet most?**

If you're talking about ridiculous things, I would love to play with Teenage Engineering's OP-1. It reminds me of my Yamaha QY70 — which I still use and love. Nifty though tablets are, I still think there's a place for a self-

contained portable music-making device.

### **If you could change one thing about your phone what would it be?**

A physical "end call" button.

### **What does being connected mean to you?**

It's brilliant. I love having information and companionship at my fingertips. But I sometimes wonder if it isn't necessary sometimes to have a bit of isolation. And even boredom. I feel overstimulated, I think.

### **When are you least likely to reply to an email?**

During sex.

### **When did you last disconnect?**

See previous answer. 



The week that was in 140 characters or less.

# Mapping the Exits, a Rare Pairing and a Fitter Fido

DISTRO  
11.30.12

ESC

REHASHED

@karaswisher

Apple to Maps  
Manager: You're  
Fired. Oh, Good  
Luck Finding  
Your Way Out of  
the Building.

@cameratraders

"I wish that Black Eyed Peas guy and the one from the JooJoo tablet got together to make an iPhone camera" –nobody ever

@mattestory

nike+ for dogs = count me in...

@NarwhalOtaku

Gonna drive all the way to Canada to pick up a Wii mini, despite the fact it doesn't support the only reason I have a Wii.

@LaughingStoic

maybe Google's  
Nexus 4 page  
would load  
faster with LTE

THE STRIP

BY BOX BROWN



## HOLLERITH ELECTRIC TABULATING MACHINE

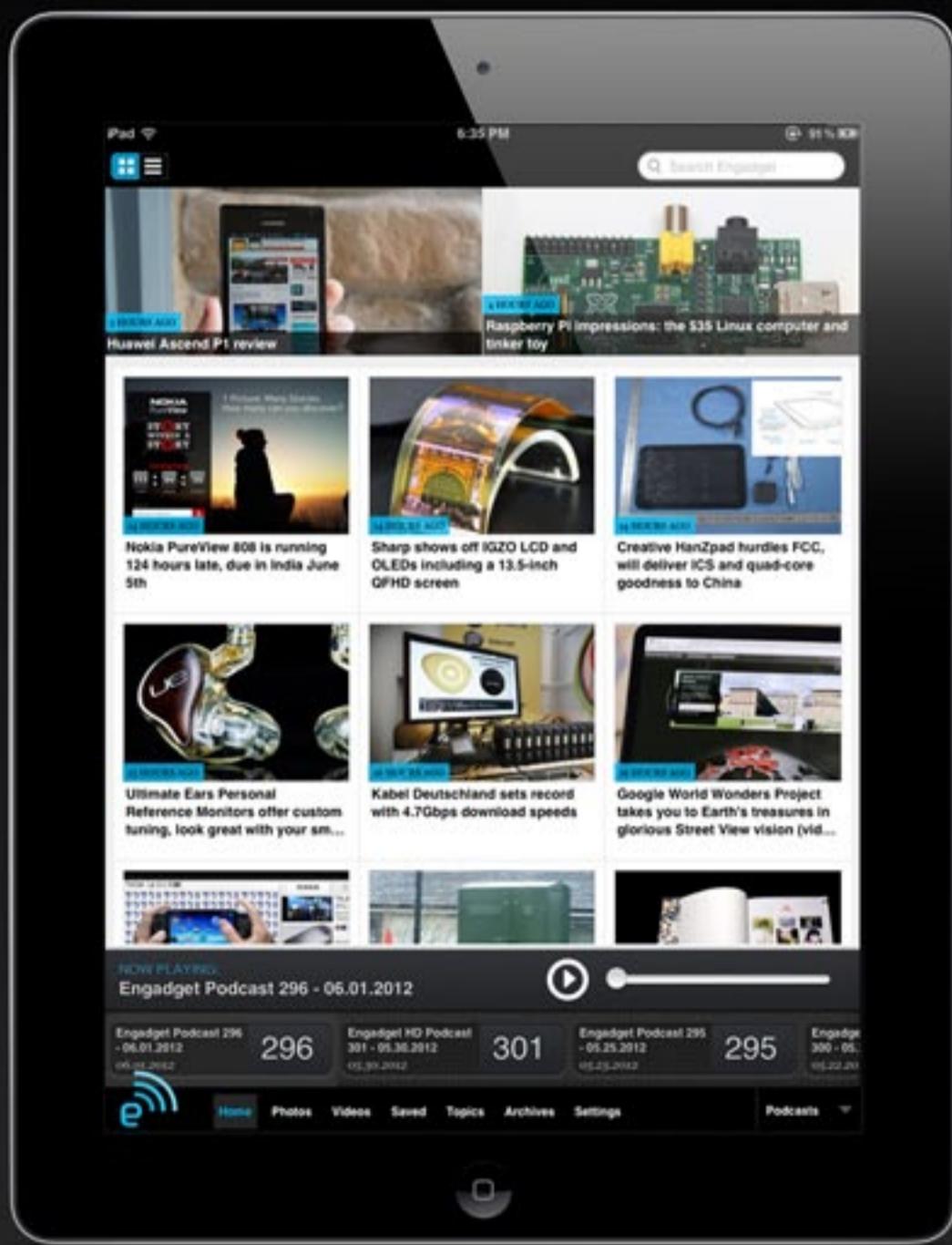


As a statistician for the US Census Bureau in the 1880s, Herman Hollerith saw the need for an improved tabulating system as the volume of data began to overwhelm the manual process. He devised an electric, punch card-based system that read and tabulated data from encoded cards 10 times faster than before, securing him global contracts and a thriving business. In 1924, after a revitalizing period of new leadership, Hollerith's Computing Tabulating Recording Company (CTR) was renamed and became the International Business Machines Corporation, or IBM.



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